

*Principles of*  
**NATIONAL INCOME  
ANALYSIS**

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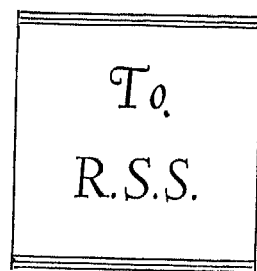
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# Foreword

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THIS BOOK has been prepared during a study of certain economic aspects of public finance conducted under a grant of funds from the Rockefeller Foundation to Columbia University. One of the projects in this study has been concerned with fiscal policy. As a preliminary step, it seemed advisable to attempt a somewhat more systematic treatment than had hitherto appeared concerning the place of the government's tax revenues, borrowings, and expenditures in the national income accounts. This task in turn was found to require a fairly systematic resurvey of the accounts. Moreover, an examination of the existing series of estimates with references to the sources used and the degree of approximation obtained seemed necessary as one step in ascertaining how much confidence might be placed in fiscal policy implications that may be drawn from national income data.

At the same time, an attempt has been made to meet the needs of the students in one of my courses for an explanation of the methods used in the prevailing compilations with particular attention to the differences in method. This pedagogical aim is the explanation for Chapters 2, 3, and 4, which can be skipped without loss by anyone who is already familiar with national income analysis.

The Department of Commerce estimates reproduced in Chapters 5 to 10 have been superseded by a revised series. Some parts of the new series were made public in preliminary form before 1947, and are included in the tables in those chapters. The complete revision was issued in a supplement to the *Survey of Current Business*. Appendix B presents some of these revised data, made available in July, 1947. For the rest, it was considered inadvisable to postpone publication until the revised data could be worked into the text of the present book, which explores concepts and methods, using the actual compilations to illustrate the points at issue, more than it analyzes the state of affairs pictured by the data.

Owing to limitations of time and resources, this volume contains no analysis of national wealth. No census of wealth has been taken in the United States since that for 1922. For recent discussions of national wealth, the reader is referred to papers on that subject in Volumes Two and Three of *Studies in Income and Wealth*, Section IV of Simon Kuznets' *National Product since 1869*, and a paper delivered by Martin R. Gainsbrugh at the November, 1946, Conference on Income and Wealth, "The Need for National Wealth Estimates."

I have been fortunate in the research and editorial assistance of Lucie Krassa throughout the project and the research assistance of Orris C. Herfindahl and Louis J. Majewski at various stages of the work. It is a pleasure to acknowledge with thanks the many helpful comments received from those to whom the manuscript and galleys were submitted. This assistance was received from so many persons that it has proved impracticable to make individual acknowledgments in this foreword; but I should like to indicate my special obligation to Rollin F. Bennett and Albert G. Hart, for their generous response to my frequent requests for comment and criticism, and to officials and staff members of the National Income Unit in the Department of Commerce and of the National Bureau of Economic Research for invaluable assistance given in correcting deficiencies in the manuscript. No one but the author, however, bears any responsibility whatsoever for conclusions reached or errors committed.

CARL S. SHOUP

NEW YORK CITY  
JULY, 1947

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# 1

## *The Concept:*

### **NATIONAL INCOME**

#### **I. NATIONAL INCOME AS TOTAL PRODUCT OR SUM OF FACTOR PAYMENTS**

1. The national income is usually defined as the amount of commodities and services produced during a period of time for the residents of a country. An alternative expression for "national income" is, therefore, "national product." Only net product is counted, and the total is expressed in terms of money.

Some of the residents of a country have an ownership interest in factories, land, and other means of production that are located in other countries. Consequently, some foreign production belongs to the residents of the first country by virtue of these ownership interests. This product, although it originates abroad, is included in the national income of the first nation. Correspondingly, some of the factories, land, and other productive agents that are located within the first country are owned by non-residents. The national income of the first country excludes the product attributable to these foreign-owned means of production.

A different concept of national income, sometimes employed, makes just the reverse distinction. National income under this second concept includes all the goods and services produced within a given area. Therefore, it includes even the output that goes to non-resident owners of the area's capital equipment, and excludes all goods or services produced by capital equipment located abroad, however owned.

Unless otherwise specified, the present volume uses the first concept: all net product going to the residents of a country.

"Net" means that double counting is avoided; only final products are included in the national income. For example, a certain piece of steel produced during the year goes into an automobile that is turned out before the end of the same year. Since the full value of the automobile is included in the national income, the steel must not be entered also, as a separate item, for its value is already included in that of the automobile. The steel is an intermediate product, not a final product. On the other hand, if by the end of the year the steel has not been incorporated in an automobile or anything else, it must be counted as part of the final product; otherwise the national income for that year will not include the steel at all.

If a piece of machinery or other asset is partly worn out in the production of the year's output, a minus entry is made to take account of this inroad into the stock of wealth existing at the start of the year. Similarly, a stock of raw materials or other goods on hand at the start of the year, although replenished from time to time, may be smaller by the end of the year because so much has been used up in production. The materials or goods may become component parts of other goods (steel sheets going into automobiles) or may be destroyed (fuel used to heat the automobile factory). In either case the decrease in the stock or inventory must be entered as a deduction in computing the total of final products for the year.

The final products are valued at their sales prices if they have been sold during the year. If they have not been sold, they are valued at cost of production.

**2.** Production implies activity or sacrifice, or at least permission to use productive resources. Those who perform the activity, or undergo the sacrifice, or grant the permission are paid to do so. They are the workers, managers, creditors, and owners, who are supplying the "factors of production": labor, risk-bearing, and other productive services. The payments to these persons, called factor payments, take the form of wages, salaries, interest, net rent, and profits of corporations, partnerships, and sole proprietorships. There can be no production, in the national-income sense, without such payments, and such payments are not made except for production. It follows that the total of these payments equals the total of production, that is, the national income. The national income may therefore be computed

either as the sum of the values of the final products, or as the sum of factor payments. The term "payments" is broadened to include certain imaginary, or imputed, payments, especially for farm produce consumed on the farm, and for the use of a dwelling occupied by its owner. Wages paid in kind and profits accrued but undistributed are also included in "payments."

The equality of the final-product total and the factor-payment total may also be demonstrated by noting what happens to the proceeds from the sale of commodities and services.

The sales proceeds of any business firm come from two sources: sales of final products to consumers, and sales to other business firms (government and foreign trade are ignored in this simplified description). And the sales proceeds are devoted to three uses: to cover wages and other factor payments, including profits; to pay for purchases from other business firms; and to reimburse the concern for any net decrease in its inventory or in the book value of its plant and equipment. The sum of the amounts devoted to these three uses always equals the sales proceeds, even if profit has to be negative to make it so. The equality is implicit in the way profits are computed by the accountant.

If the business firms, considered altogether, have at the end of the year the same value of inventory, plant, and equipment that they had at the start of the year, there is clearly no need for the third use of sales proceeds for the business world as a whole (reimbursement for decrease in such assets). As to the second use, purchases from other firms, the total of these items for all firms must equal the total of sales by each firm to other firms; every transaction that is a purchase by a business firm from a business firm is of course likewise a sale by a firm to a firm. The second use of sales proceeds thus equals the second source of sales proceeds. Consequently, in the present case, where there is no change in the total of inventory, plant, and equipment, the first use of sales proceeds (factor payments) equals the first source of sales proceeds (sales of final products to consumers).

The economy as a whole may show a decrease in the total of inventories, plant, and equipment on hand at the end of the year, compared with the start of the year. This means that part of the inventories, etc., has been sold off to consumers, in the form of, or embodied in, final products. Sales proceeds of final products must therefore exceed the total of factor payments, to be enough to reimburse the firms for thus

disposing of part of their year-beginning stocks. Here, the equality of the final-product total with the factor-payment total might seem to be broken. But it must be recalled that in computing the total of final products (§1) a minus entry is made for a net decrease in inventories, equipment, and so forth. With this adjustment, final-product total and factor-payment total are equal.

Finally, the economy as a whole may show an increase in the total of inventories, etc., on hand at the end of the year; there is some unsold final product. Here, the sales proceeds from final products fall short of covering the factor payments. The difference is made up, as noted in §1, by adding to the sales proceeds the cost of producing the unsold final product.

When foreign trade is taken into account, the term "sales proceeds" is modified to include the net sales to non-residents: net exports. If the proceeds from sales to non-residents are less than purchases from them, the resulting net import item is a negative adjustment to sales proceeds.

The adjustment for the international ownership interests noted in the second paragraph of § 1 affects the factor-payment total and the product total to the same extent.

Sometimes the total of wages, salaries, and interest will exceed the final-product total. The equality between final-product total and factor-payment total is then maintained by the appearance of negative profits or negative net rents — business losses.

One major complication must be merely noted here, to be explored later in detail. A part of the sales proceeds is paid to the government in taxes. The government, in turn, pays the money out in wages, the purchase of materials, and so forth. A government surplus or deficit adds further complications for national-income accounting. However, if a consistent treatment of the government accounts is followed in the factor-payment approach and the product approach, it remains true that the national income will in principle be the same by either method of computation. In some countries the national income has been computed as the total of factor payments, and in others as the total of final products, depending on the statistics available. In the United States, the data allow computation under both approaches, with some qualifications.

In practice the computation from the final-product side is the more difficult one. The total reached by this method probably contains a larger error than that computed under the factor-payment ap-

proach, though opinions differ on this point (Chapter 6, § 99). Under the final-product approach it is necessary to ascertain the commodities and services purchased by consumers during the year. To this figure is added the product that goes to increase the assets of business firms (machinery, plant, inventories) at the year-end over what they were at the start of the year. The product that is exported must be included, with subtraction for imports. The product obtained by the government during the year is added. Then an adjustment must be made that is not in terms of a particular kind of product: the income derived by non-residents from investments within the country is subtracted (for example, dividends on shares of United States railroads owned by non-residents), and income derived by residents from investments abroad are added, to get the total income going to residents rather than the total produced within a geographic area. The result is the net domestic product for the year, the national income. Some of these product totals have proved especially difficult to estimate, particularly the product passing into the hands of consumers and the net increase in business assets.

3. Another way of estimating the national income from the product side is to ascertain for each firm or industry the amount of product it has turned out, final or intermediate, and subtract from that the total amount of product it has used in the process. Up to the present time this variant of the product approach has proved impracticable because of the lack of direct information on total product consumed in the production process in each industry.

## II. CHANGES IN MATERIAL WELFARE: PRODUCT-PRICE INDEX

4. Since national income measures production, it can be used as a partial indicator of material welfare. But, since it is expressed as a money total, it can be influenced by changes in prices even when there is no change in physical quantities.

Thus, if the national income of one period or region is compared with that of another, it must be adjusted by an index of prices of final products. Consider two hypothetical countries, A and B (they may be thought of as the same country at different time periods). Country A produces 100,000 bushels of wheat a year with the work of 100 men, each paid \$1000 a year. Country B employs 200 men at the same wage, but produces only the same amount, owing to the inferior nature of its soil. Country B obviously has the same national income as

country A (100,000 bushels of wheat), but the money totals do not tell this story; they seem to say that country B has reached a higher level of output, for the national income, reckoned as the total of wages paid, is only \$100,000 in country A, whereas it is \$200,000 in country B. In comparing two countries, therefore, an index of product prices (or rate of exchange) is employed to adjust one of the two totals. The cost, and selling price, of wheat is \$2 a bushel in country B; \$1, in country A. Consequently, B's \$200,000 income, divided by the price index ( $\frac{2}{1}$ ), is deflated and reduced to \$100,000.

Suitable indexes of final-product prices are hard to construct. Each country must compute its national income in terms of its own currency: dollars, pounds sterling, francs, pesos. Prevailing rates of exchange of one currency against another are not wholly adequate to make national income totals comparable. The rate of exchange is influenced by the purchase and sale of only a part, usually a minor part, of the countries' outputs. Moreover, rates of exchange are affected by transportation costs, tariffs, and other obstacles to trade. International price indexes for use with or in lieu of the exchange rates have therefore been constructed (Chapter 6, § 82). The difficulty of comparison is increased by differences in types of product produced, owing partly to differences in wants or tastes from one country or one region to another and partly to differences in the free goods (§ 19) available.

Similarly, comparisons among different years for some one country are not as meaningful as they may at first appear. The unavailability of elaborate price indexes for earlier decades makes difficult any inferences from a comparison of the national income of today with that of the latter decades of the nineteenth century or even the first decade or two of the twentieth. And changes in wants from one period to another make interpretation of the inferences doubtful.

5. Even if it is assumed that consumer wants are the same at one time or place as at another, the deflated total of national income may be ambiguous as a partial indicator of material welfare. It is possible for the pattern of consumption to alter, because of changes in relative prices of various goods, in a way that makes it impossible to obtain a clear answer through adjustment by an index of prices.

6. In any event, national income as a partial indicator of the level of material welfare must be expressed in terms of income per person, or income per family, or per consumer unit in which a child is counted



as a fractional part of an adult consuming unit. As an indicator of productivity, income produced within an area may be expressed in terms of income per person in the labor force or per person actually employed.

7. The considerations in §§ 4 and 5 do not render meaningless the comparison of national income totals among years in the same decade or two or among countries with similar cultures. Even in these cases, however, small differences of a few percentage points must be ignored as having no clear meaning.

8. As the discussion above implies, a total of national income by itself can carry no message whatsoever — a fact not generally realized, because in actuality the money figure of national income never does stand absolutely alone; the reader, if not the author, supplies fragments of background data with which to interpret the money total. But if a man from Mars were told that the national income of the United States was \$140 billion, or about \$1000 per capita, and if that were all he was told, he would know nothing. If he were also informed of the prices charged for bread, for work clothing, and for dwelling accommodation of a common type, he would have some indication of what the community was receiving, in physical terms, for its expenditure of time and energy. But to get this information he would have to go far beyond a study of national income totals. Indeed, none of the treatises on national income would be likely to contain all these facts.

Although a money figure of total national income can give no indication of the absolute level of production, it may, if it is compared with other totals, be a partial indicator of the relative level: this year's national income compared with last year's; the income of one nation compared with that of another. The money total is also needed to compute the percentage of the national income obtained by this group of people (wage earners, for instance) compared with that group (landlords, for instance); the proportion of the national income resulting in consumer goods purchased compared with the proportion resulting in an accumulation of business inventories, plant, and equipment; the percentage by which national income would increase if unemployment were eliminated. In general, national income totals and sub-totals, expressed, as they must be, in money form, are useful only as relative, not absolute, data. Any purpose that such totals or sub-totals are capable of serving when used with-

out supplementary data on rates of pay or prices of product can be met by stating them in percentage form.

### III. CHANGES IN COST, OR INPUT: FACTOR-PRICE INDEX

9. The same items of wages, salaries, interest, rent, and profits that make up the national income (computed from the factor-payment approach) also measure elements of cost, or input. For example, the amount of wages paid may give a rough index of number of man-hours of work. For this purpose, wages paid on a time basis are taken directly; piece-rate wages are adjusted to a time-rate basis. The resulting measure of amount of work is no index of the amount of energy put forth in terms of calories utilized or some other physical measure. The worker may be exerting himself greatly or almost not at all. Instead, it is an index of the amount of time spent, time that was therefore not available for producing other things, and not available for leisure. Similarly, the amount of interest and rent commonly reflects the use of a sum of money or capital goods in terms of time. Even profit, variable though it is through a positive and negative range, reflects an opportunity cost in which time sacrificed is an important theme.

10. As with income, an item of input can be compared for different periods or different nations only if adjustment is made for differences in price levels; but in this case the prices in question are factor prices, not product prices. A change in the hourly wage of the farm laborer, not a change in the price of wheat per bushel, is relevant if inputs are being compared.

Consider two countries, X and Y. Country X produces 100,000 bushels of wheat a year with the work of 100 men, each paid \$1000 a year. Country Y produces only 50,000 bushels of wheat a year with the work of the same number of men. It pays them each only \$500 a year. The money total of wages in X is \$100,000; in Y, only \$50,000. The price of the product, wheat, is \$1 a bushel in both countries. But the wage-rate (time-rate, not piece-rate), is \$1000 a year in X, \$500 a year in Y. The product-price index is 1; the factor-price index (Y compared with X),  $1/2$ . Dividing Y's wage total (\$50,000) by the factor-price index gives an adjusted national cost or input for Y equal to that of X (\$100,000). This is correct, at least in terms of time spent; in both X and Y, 100 men work for a year.

Y's workers may be less energetic than those of X; they may be using up fewer calories, producing fewer ergs. Or, on the contrary, they may be handicapped by inferior soil or lack of skill, so that, although their output is lower, they expend the same amount of energy as the workers in X. The lower national output per unit of national input does not necessarily imply less exertion. In a very general sense it does imply a lower economic efficiency of the economy as a whole, including the natural resources available.

11. The concept of national cost or input will not be developed further in this volume. The concept of a comprehensive factor-price index that covers the rewards to all the various types of factors seems to have been barely mentioned in economic analysis, and no attempt has been made to construct such an index. Of the few remarks to be found on this subject, some appear to deny the possibility of any useful developments through a factor-price index. However, it will be pointed out in later sections of this volume that discussions of certain national income problems, especially those concerned with war, seem to have drifted into an analysis of something that approaches closely the idea of national input. It seems likely that the national cost concept, or something approaching it, is capable of development both theoretically and statistically,<sup>1</sup> although perhaps no more than as a refinement of the usual computations of output per man-hour, to take account of the assistance rendered by capital instruments. For purposes of the present analysis, it is enough to note that, whatever national income measures, it does not directly measure activity, or time spent; these are input concepts.

#### IV. OTHER MAJOR LIMITATIONS OF NATIONAL INCOME DATA

12. Apart from the problems raised by changes in prices (§§4-8), national income as a partial indicator of material welfare shows other severe limitations. Some of them arise from the difficulty of defining material welfare or even production (§§13-22), and some, from the difficulty of obtaining data (§§23-26). Considering all these problems together, certain students of national income are disposed to conclude

<sup>1</sup> See M. A. Copeland and E. M. Martin, "The Correction of Wealth and Income Estimates for Price Changes," *Studies in Income and Wealth*, II, 103-05, 131-35, and comment by Solomon Fabricant, *ibid.*, pp. 121-23, and Milton Friedman, *ibid.*, pp. 125-27; and for adverse comment on the factor-index idea, see Gottfried Haberler and Everett E. Hagen, "Taxes, Government Expenditures, and National Income," *Studies in Income and Wealth*, VIII, 17, note 28.

that the estimates have little if any value as indicators of material welfare, productivity, or indeed of any one thing in particular.<sup>1</sup> This attitude, however, seems to overrate the difficulties. The national income totals are in fact being used as indicators of relative economic power, or welfare, and it would be going too far to hold such uses completely invalid, on the grounds that the national income totals can measure nothing that is relevant enough. For example, the United Nations Relief and Rehabilitation Administration was financed by a requisition from each nation (with important qualifications) for a contribution equal to one per cent of its national income, and, in the United States, federal aid to the states is being based in part on relative state incomes (Chapter 10, § 5).<sup>2</sup>

13. If the nation is either building up its capital or living off its capital, the national income for the year is not very effective as a measure of the current material welfare of consumers. A part of the year's consumption may be supported by drawing on stocks of goods held by business firms at the start of the year, wearing out machines and plant, and using up natural resources. A nation thus living on its capital has a current consumption, and in this sense is experiencing a material welfare, larger than its national income. Apart from war such a situation has been unusual in recent decades and in countries for which national income data are available. On the contrary, a substantial part of the year's production usually goes to increase the year-end stock of goods, machines, and so on, over the year-beginning stock. This part of the year's production is not available to consumers currently, and the national income for the year overstates the consumers' material welfare. But the addition to capital holds out promise for a higher level of consumption in later years, without a corresponding increase of effort in those years. National income is a partial index to welfare in terms of "net accretion to . . . economic power"<sup>3</sup> (including whatever part of the accretion is used for

<sup>1</sup> This viewpoint is expressed in George Jaszi, *The Concept of National Income and National Product, with Special Reference to Government Transactions*, pp. 184, 363. See also Edward F. Denison, "Report on Tripartite Discussions of National Income Measurement," *Studies in Income and Wealth*, X, p. I-2, and comment by Jerome Rothenberg, *ibid.*, p. 1-77 (mimeograph).

<sup>2</sup> See also Arthur Smithies, "National Income as a Determinant of International Policy," *Studies in Income and Wealth*, VIII.

<sup>3</sup> Robert M. Haig, "The Concept of Income — Economic and Legal Aspects," in Robert M. Haig, ed., *The Federal Income Tax* (Columbia University Lectures, 1920), p. 27. See also J. R. Hicks, *Value and Capital*, chap. XIV, and Tibor Barna, *Redistribution of Incomes through Public Finance in 1937*, p. 7 (" . . . the maximum that can be consumed while still allowing the consumption of the same amount in *real* terms in the future").

consumption) rather than current flow of services to consumers.<sup>1</sup>

Moreover, the data on consumption do not really show consumption. They merely show purchases by consumers. The purchases of passenger automobiles can fall off from one year to the next by a large percentage while consumers are experiencing little restriction in use of automobiles. They continue to "consume" by wearing out the old automobiles. Eventually, of course, consumption must cease unless purchases are resumed. But for any one or two years the sales of automobiles, washing machines, and similar articles may bear little relation to the amount of use actually being obtained.

The data on owner-occupied houses, however, show annual consumption rather than purchases, in most national income computations. The purchase of a house by a home-owner is counted as an investment, not as a consumption expenditure; and an entry is made each year for the estimated rental value of the house, as a measure of consumption.

14. An especially difficult problem of double counting is posed by the services rendered by government. Even in peacetime, it is not easy to decide what part, if any, of these services should be excluded on the grounds that they merely facilitate the production of goods by private enterprise and therefore are not themselves to be counted as final products.

15. Labor conscripted by the state, as in compulsory military service, may be paid little or nothing, thus resulting in what might be considered an understatement of national income.

16. Production for war raises questions of definition that are still unsettled. Considerations are adduced in Chapter 7 for treating munitions and other war goods and services as a means of getting the final products that consumers want, not as additional products. In this view, diversion of a country's resources to war produces a decline in its national income. All current methods of computation, however, have adopted another view, and include battleships, shells, the services of infantrymen, and so on, in the product to be measured as national income.

17. Incomes obtained or "product" produced in illegal activities

<sup>1</sup> Cf. Irving Fisher, *The Nature of Capital and Income* (1906), *passim*. For discussion and other references see James C. Bonbright, *The Valuation of Property*, II, chap. 26, and Roswell Magill, *Taxable Income* (rev. ed., 1945), chap. 1.

are not included in national income estimates. Some of these activities, like burglary, merely add to the cost of final goods without increasing the physical amount. Others, like illegal liquor manufacture, add to the flow of final products. Where "black markets" are widespread, the inclusion of the latter type of illegal activity may be essential to avoid arriving at a total of national income more misleading than informative. Otherwise, illegal activities can probably be ignored if only because their total is so small. But the reason usually given for excluding them is that the national income total should include only the products that society recognizes as legitimate. All legally permissible products are included, even if by some objective test the product might be considered as not serving the end for which it was purchased (for example, a useless or harmful patent medicine). For the national income estimator, the consumer is the judge of what should be included in final product, mistaken though he may be.

18. National income is usually computed for a twelve-month period — too short a duration to avoid perplexing problems of allocating some parts of income, notably profits, to one period rather than another. A special view of such difficulties is taken by some who consider cyclical movements of industry and business to be inevitable characteristics of the economy. They conclude that the national income produced in a given year cannot be considered the fruit of that year's activities, any more than the crop growth of a particular month is the fruit only of that month's activities. The lack of production in a year of depression is considered a necessary preparation for, or a result of, the extra production in a year of prosperity; the latter is not possible without the former.<sup>1</sup>

19. The national income total shows the amount of product obtained, not the amount of effort, or sacrifice of leisure time, that goes into obtaining it. Of two nations with the same income per person, the one that acquires that income with the lesser expenditure of work or time has a higher level of material welfare. Leisure is a valuable commodity; people will even forgo the receipt of money in order to obtain it. But it is not a "product" that is a part of national income.

Moreover, if some commodity or service is supplied by nature under

<sup>1</sup> Solomon Fabricant, "On the Treatment of Corporate Savings in the Measurement of National Income," *Studies in Income and Wealth*, I, 117-19, 126-27.

conditions whereby no one can appropriate it and sell it, it is a "free good" and does not enter into the national income total at all. The national income of a country in the temperate zone will include the fuel burned in homes for warmth, but the national income of a country in the tropics will not include the warmth derived from the sun.

Similarly, the degree of unpleasantness of working conditions, apart from the mere amount of time or effort required, is not reflected in the national income total.

**20.** The residents of a country may value an increment of income more highly if it is to come to them in an earlier rather than a later year, even though their other income for the two years is identical and assured. The residents of a country may value such a pattern of income — \$150 billion this year and \$100 billion next year — more highly than the reverse pattern, \$100 billion this year and \$150 billion next year. National income computations do not take account of this possible preference for an earlier income. In year-to-year comparisons of national income totals, a dollar received as a factor payment in 1950 is counted as equal to a dollar received in 1940.

Perhaps the neglect of this point is not too serious an objection. Indeed, it can be argued that the point should be ignored if the aim is to measure variations in welfare. In the first place, this preference is in a sense irrational. Let it be assumed, in the illustration given above, that \$50 billion, if received in the first year in addition to \$100 billion income, gives rise in that year to just the same satisfaction, no more and no less, as it does in the second year if received in the second year over and above \$100 billion income. Yet, standing in the first year, the income receivers want the extra \$50 billion then rather than in the second year; and, standing in the second year, the income receivers wish that the \$50 billion increment had been postponed to the second year instead of being received in the first. It may be doubted that national income should attempt to take into account any such scale of irrational, or at least shifting, preferences. In the second place, there is no conclusive evidence from economics data that, on balance, persons do have an absolute time preference. The existence of a positive rate of interest is no proof of a positive time preference; positive interest can exist merely through the possibility of turning out an increased final product by methods of production that take time, which in turn implies increasing income from waiting.

Interest — or profit, as a reward for risk — can also exist through preference for holding assets in a money form.<sup>1</sup>

**21.** As a measure of relative welfare in two periods of time, national income suffers from still another defect, even if the populace has no absolute time preference. This defect is an inability to take account of the changing intensity of wants that are satisfied, as the total national income grows or declines. For example, as a country's per-person income increases, the later increments may not add as much to welfare as do earlier increments of the same dollar size. No changes in price levels are at issue here. Assuming that the price level, the population, and the pattern of wants remain unchanged, a growth of \$50 billion of national income on top of an income of \$100 billion may well be considered to represent a larger increase in welfare than a further growth of \$50 billion on top of an income of \$150 billion.

**22.** Can national income ever be a negative item, even in theory? It will be seen from the analysis in succeeding chapters that no payment for a factor of production can ever produce in itself a negative increment to national income. The worst that can happen is that someone may work without producing anything of value, so that the increment to national income is zero. However, if property values decline during the year, especially if for some reason other than use in production, it is conceivable that the national income for the year could be negative. If national income computations took account of bomb damages of war years, or of earthquakes, a net negative national income might be shown. Such items are usually omitted from the national income accounts, not because they do not represent a real loss in material welfare, but because of the reluctance of the computer to charge the particular year of occurrence with the full amount of the loss.

**23.** A large block of work is missing from current national income estimates: work done in the home by housewives and other members of the family. This omission is sometimes supported on the ground that national income estimates should in principle include only products that are bought and sold on the market, but the chief reason seems to be the difficulty of estimating the value of these services.

<sup>1</sup> Among the large number of references that might be cited on this point, the following may be particularly helpful: Alfred Marshall, *Principles of Economics* (8th ed.), pp. 230–36; Frank H. Knight, *Risk, Uncertainty and Profit*, pp. 130–34; A. C. Pigou, *Economics of Welfare* (4th ed.), pp. 24–29; J. M. Keynes, *The General Theory of Employment, Interest, and Money*, chaps. 13 and 15.



In some countries, particularly the United States, many housewives take jobs outside the home and with their earnings buy various services (bread-baking, house-cleaning, laundering) that they could themselves perform in the home. Compared with countries where practically all housewives work in the home rather than in outside jobs, the United States thus tends to show a higher per-person national income.

Philanthropic, political, and scientific activity by those who receive no compensation for their work is excluded. For much of this activity, little or nothing would be offered, even if none of it were available free of charge. Hence, to this extent, however worthy the cause under standards other than that of the market-place, the activity cannot be counted even as imputed income. Paid philanthropic activity — A pays B to render a service to C — is of course a different matter; it is usually included in national income estimates.

**24.** Owing to lack of data, current estimates fail to include much, perhaps most, of the work done in casual part-time paid jobs.

**25.** Farm products consumed by the farm family are in principle included in national income. The data available on this point are often so scanty that in practice the national income of a largely agricultural country is likely to be substantially understated.

**26.** The value of inventories, machinery, plant, and other assets on hand at the start and at the end of the period must be ascertained (§1). There is no one obvious, simple method of valuation available, and the choice among methods can make a difference of several percentage points in the national income total, particularly in a period when economic activity and prices are changing.

**27.** National income is not the same as "income payments." The latter is the sum of payments to individuals. It, therefore, excludes certain segments of national income: profits not distributed by business corporations, and payments into social security funds. Moreover, the term "income payments" (or "personal income") covers some items not included at all in the national income (Chapter 10, § 3).<sup>1</sup> National income also differs from "gross national product," which is computed before deducting depreciation charges and business taxes (Chapter 6, §§ 4, 54, 69).<sup>2</sup>

<sup>1</sup> King's estimates of income payments for 1909-19, adjusted to Kuznets' concepts, are given in Kuznets, *National Income and Its Composition, 1919-1938*, II, 469-74.

<sup>2</sup> Discussions of what "national income" means and what items should be included are given in A. C. Pigou, *The Economics of Welfare* (4th ed.), especially chaps. I-III; Simon

## V. COMPUTATIONS OF NATIONAL INCOME

28. For the United States, recently constructed estimates are available in appreciable detail for each year only for the period 1919 to date. Averages for ten-year periods have been computed from the product approach, with sub-totals, for the period 1869 to 1919.<sup>1</sup> In another series rough estimates for every tenth year, subdivided by industrial groups, have been made for the period 1799 to 1899, and yearly estimates, with more details, for 1899 to 1938.<sup>2</sup>

For Great Britain, a detailed annual series goes back only to 1938. Fairly elaborate estimates have been made for certain earlier years.<sup>3</sup> In Germany, official estimates covering the periods 1891 to 1913 and 1925 to 1931 were published in 1932, and continued through 1938.<sup>4</sup>

Kuznets, *National Income and Its Composition, 1919-1938*, I, chap. I, and *National Income — A Summary of Findings*, part IV, sec. 3. See also J. R. Hicks and Albert Gailord Hart, *The Social Framework of the American Economy*, and Erik Lindahl and others, *National Income of Sweden, 1861-1930*, part I, chap. I. For the views of the United States Department of Commerce, see its *Income in the United States, 1929-37* (1938), by Robert R. Nathan, and *Monthly Income Payments in the United States, 1929-40* (1940). Students of the recent history of the concept "national income" in the United States will be interested in the earlier views presented in *National Income, 1929-32* (1934, Senate Document no. 124, 73d Congress, 2d Session); *National Income in the United States, 1929-35* (United States Department of Commerce, 1936); in various papers in the series, *Studies in Income and Wealth* (National Bureau of Economic Research), especially M. A. Copeland, "Concepts of National Income," and discussion by Simon Kuznets and Clark Warburton in volume I, pages 3-63, and pages 175-85 and 214-21 in Gerhard Colm's "Public Revenue and Public Expenditure in National Income" in volume I; and in other works on national income referred to by Wesley C. Mitchell in *The National Bureau's First Quarter-Century*. Further and earlier material on British views of the concept are in J. C. Stamp, *British Incomes and Property* (1916); Colin Clark, *The National Income, 1924-1931* (1932), and *The Conditions of Economic Progress* (1940). A review of various concepts and sub-concepts followed in actual computations is given by Marvin Hoffenberg and Mabel S. Lewis, "Estimates of National Output, Distributed Income, Consumer Spending, Saving and Capital Formation," *Review of Economic Statistics*, May, 1943. For a review of national income estimates in Great Britain in the seventeenth and eighteenth centuries, and the uses to which they were put, see Jaszi, *op. cit.*, chap. II, and bibliography, pp. 377-83. A comprehensive analysis and a bibliography are given in Kuznets' article, "National Income," in the *Encyclopaedia of the Social Sciences*, II, 205-24 (reprinted in *Readings in the Theory of Income Distribution*, William Fellner and Bernard F. Haley, eds).

<sup>1</sup> Simon Kuznets, *National Product since 1869*.

<sup>2</sup> R. F. Martin, *National Income in the United States, 1799-1938*.

<sup>3</sup> Arthur L. Bowley, *Wages and Incomes Since 1860* (1937) and *Studies in the National Income* (1942); Arthur L. Bowley and Sir Josiah Stamp, *Three Studies on the National Income* (studies made in 1919, 1920, 1927; reprinted in one volume in 1938); Colin Clark, *National Income and Outlay* (1937); J. C. Stamp, *British Incomes and Property* (1916). A comparison of the Bowley, Clark, and White Paper estimates, and details on the estimates of the British national expenditure are given in Tibor Barna, *Redistribution of Incomes through Public Finance in 1937*, Appendices A and C.

<sup>4</sup> *Das Deutsche Volkseinkommen vor und nach dem Kriege* (Einzelschriften zur Statistik des Deutschen Reiches, no. 24, Berlin, 1932), and *Statistisches Jahrbuch für das Deutsche Reich*,

The national income of Sweden has been computed for 1861 to 1930.<sup>1</sup> The official compilations of the Australian, Canadian, and Irish national income cover the period starting with 1938.<sup>2</sup> For other countries the national income data so far published are less detailed, or cover fewer years, or are merely rough estimates.<sup>3</sup>

The present volume, being devoted primarily to the principles of national income analysis, restricts its factual material to the period since 1919 (1938, for Great Britain). In the United States, the national income data for the years 1919 to 1928 are somewhat less detailed than those covering the period since 1928. The accounts prior to 1919 yield only estimates of the total national income and its major components.

Income totals for areas smaller than a nation have also been computed.<sup>4</sup>

**29.** National income computations have depended in part on statistics compiled by central governments from income-tax returns. In the United States the corporation income tax was not introduced until 1909, and the personal income tax not until 1913, aside from a brief period during and after the Civil War. Great Britain has had an income tax for many decades, but has never published detailed compilations on the scale achieved by the United States Treasury in its annual *Statistics of Income*.

Periodic censuses of industries have been the other major source of information. The national income estimates in the United States, although computed from the factor-payment approach, have been built up industry by industry. Wages and salaries paid in the manufacturing industries have been computed from data in the biennial *Census of Manufactures*; those in the mining industry, from the *Census of Mines and Quarries*, and (later) the *Census of Business*; and so on. Recently social security payroll tax data have been used.

1931-1938. See also Ernest Doblin, "Measuring German National Income in Wartime," *Studies in Income and Wealth*, vol. VIII.

<sup>1</sup> Erik Lindahl, Einar Dahlgren, and Karin Kock, *National Income of Sweden, 1861-1930* (1937).

<sup>2</sup> Australia: Budget Paper, *Estimates of National Income and Public Authority Income and Expenditure*, presented by J. B. Chifley on the occasion of the Budget 1945-46. Canada: Dominion Bureau of Statistics, *National Income Accounts: Income and Expenditure, 1938-1945*. Eire: *National Income and Expenditure, 1938-1944* (P. No. 7356), presented by the Minister of Finance, March, 1946.

<sup>3</sup> See also the references in Chapter 11, § 9.

<sup>4</sup> For reference to such computations in the United States, see Chapter 8, § 26, and Chapter 10, § 1.

A census of manufactures and a census of population have long been a regular part of the United States' statistical output, but 1929 was the first year for which a census was made of wholesale, retail, construction, and hotel activities in this country. For other service activities, the first census was taken in 1933, 1935, or 1939. No other country has ever conducted a comprehensive census of these branches of its economy.

The last census of manufactures was taken in 1940, covering 1939; the next is planned for 1948, covering 1947.

30. The task of compiling national income data in the United States on a large scale was initially undertaken by a privately financed organization, The National Bureau of Economic Research. Its first volumes on this subject were published in 1921, 1922, and 1925.<sup>1</sup> In 1930, W. I. King's book appeared under the Bureau's auspices, *The National Income and Its Purchasing Power*; and in 1937, the first of a series of volumes by Simon Kuznets, likewise under the Bureau's auspices: *National Income and Capital Formation, 1919-1935*. In 1938 there followed Kuznets' *Commodity Flow and Capital Formation*; and in 1941, his two-volume work devoted chiefly to the details of computation under the factor-payment approach, *National Income and Its Composition, 1919-1938*. Conceptual issues sharpened by wartime developments were re-examined in his *National Product in Wartime* (1945). Ten-year averages for the period 1869-1919, on the product side, and revised product data for the annual series starting with 1919 were published in his *National Product since 1869* (1946). Data from these volumes were assembled and interpreted by Kuznets in *National Income — A Summary of Findings* (1946).

Major parts of the Bureau's national income series were provided by Solomon Fabricant, in *Capital Consumption and Adjustment* (1938), and by William Shaw in *Finished Commodities Since 1879* (1941).<sup>2</sup> Quarterly estimates were presented in another Bureau volume, Harold Barger's *Outlay and Income in the United States, 1921-1938* (1942).

<sup>1</sup> Wesley C. Mitchell, W. I. King, F. R. Macaulay, and O. W. Knauth, *Income in the United States*, vols. I (1921) and II (1922); O. W. Knauth, *Distribution of Income by States in 1919* (1922); and Maurice Leven, *Income in the Various States — Its Sources and Distribution, 1919, 1920, and 1921* (1925).

<sup>2</sup> All of the Bureau's publications on national income mentioned in this section are now (1947) out of print except *Finished Commodities since 1879*, *National Product in Wartime*, *National Product since 1869*, and *National Income — A Summary of Findings*. For a review of Kuznets' and other works on national income, see D. C. MacGregor, "Recent Studies on National Income," *Canadian Journal of Economics and Political Science*, Feb., 1945, pp. 115-29, and May, 1945, pp. 270-80.

31. In 1932 the Department of Commerce initiated a study of national income in response to a Senate resolution. The first publication, a major work produced under the direction of Kuznets and entitled *National Income, 1929-32*, was followed by a number of detailed and comprehensive studies published as separate documents, the last one that presented much detail being *National Income in the United States, 1929-35* (1936). In recent years the results of the Department's continuing study have been published in articles in the *Survey of Current Business*.<sup>1</sup>

32. In Great Britain, the detailed data for 1938 and later years appear in the annual White Papers prepared in the Government's Central Statistical Office, with the collaboration of the Treasury, and entitled "An Analysis of the Sources of War Finance and an Estimate of the National Income and Expenditure in —." <sup>2</sup> The first issue was published in 1941.

The appearance of John Maynard Keynes's *General Theory of Employment, Interest and Money*, in 1936, with its analysis of the concepts "saving" and "investment" and of certain other aspects of national income, helped to provide a useful conceptual framework into which the compilations being made in the United States and Great Britain could be fitted. The decision so to define "investment" and "saving" that they are always equal for any given time period for the economy as a whole proved especially fruitful for national income analysis (see Chapter 8, §§ 1-15).

## VI. THE PRESENT VOLUME

33. The three chapters following (Chapters 2, 3, and 4) are purely illustrative; they show how national income is commonly computed,

<sup>1</sup> See also Milton Gilbert and Louis Paradiso, "National Income and Other Business Indicators," in Philip M. Hauser and William R. Leonard, *Government Statistics for Business Use*. The Department is now completing a revision of its national income series, including conceptual changes, which will appear some time in 1947 as *National Income and Product Statistics for the United States, 1929-46*. This report will be followed by a volume containing a full discussion of the problems involved in concepts, statistical methods, and use of sources. Two statements of national income accounts by Richard Stone are soon to appear in his "National Income and Expenditure: A Review of the Official Estimates of Five Countries" (*Economic Journal*) and in his "Definition and Measurement of the National Income and Related Totals," an appendix to the *Report of the Sub-Committee on National Income Statistics*, League of Nations.

<sup>2</sup> The construction of the tables in these White Papers is explained by J. E. Meade and R. Stone, "The Construction of Tables of National Income, Expenditure, Savings and Investment," *Economic Journal*, June-September, 1941, pp. 216-33.

in terms of a small hypothetical economy of thirteen individuals, nine business firms, including seven corporations, a pension fund, and, in Chapter 4, a government. Chapters 5 and 6 describe in some detail the methods used in computing the two major series of income data available for the United States, those by Kuznets and the Department of Commerce. The two sets of estimates are reproduced, beginning with 1919, and some critical comments on concepts are offered. The first of these two chapters describes the computation of the factor payments; the second, the approach from the product side. The government's revenues and outlays are noted only incidentally in Chapters 5 and 6; Chapter 7 is devoted to a critical review of existing methods of treating the government's money flows in the computation of national income. In Chapter 8 the widely used equation, saving is equal to investment plus government deficit, is explained, and some data on saving and distribution of families by size of income are reproduced. Chapters 9 and 10 summarize the data available, and the problems involved in obtaining them, for two types of subdivision of income totals: national income produced in each industry, and income payments to individuals in each state. The final chapter describes the methods used in the British White Papers on national income.

The chapters devoted to the hypothetical economy are placed early in the book because their purpose is to develop in the student a facility in the employment of the tools of analysis that he will need if he is to understand the uses and the limitations of the series of data now available, and if he is to follow the arguments for and against rival methods of treating a given item in the computation of national income.

# 2

## *An Illustrative Economy:*

### **THE NATIONAL INCOME STATEMENT FOR THE PRIVATE SECTOR**

1. The estimates of national income that have been made for the United States and Great Britain, and the differences of concept reflected in those estimates, are the chief subjects of the present work. This material, however, may best be approached, at least by those not acquainted with national income analysis, through an illustration consisting of a small hypothetical economy. This is done in the present chapter and in Chapters 3 and 4. The present chapter states each transaction that occurs in this highly simplified economy and constructs a table showing factor payments and type of product. Chapter 3 rearranges the items to show the amounts of purchase and sale by one industrial segment from or to another, the amount of national income originating in each industry, and the flow of money through the economy. Chapter 4 introduces examples of governmental factor payments and product.

Chapters 5 and following deal with actual rather than hypothetical figures. They also discuss the main conceptual points at issue, instead of merely stating the generally accepted view, as in Chapters 2 through 4.

The building block of the national income structure is the single business transaction. The estimates of national income for the United States are constructed from billions of these building blocks. The construction is the work of many hands. The business firm itself, when it files its income-tax return or fills out a census questionnaire, is in fact consolidating hundreds or thousands of separate transactions

into a few summary items. For example, each separate payment of wages by the firm is consolidated into one item in its report: total wages paid during the year. The Treasury Department or the Census Bureau in turn adds this summary item from hundreds or thousands of returns or questionnaires received from an industry and publishes a figure for total wages paid in this industry during the year. The national income estimators add the amounts of wages reported in each industry to get a total of one type of factor payment — wages — for the economy as a whole.

The way in which the business transaction is entered on the books of the company therefore influences the totals shown in the national income accounts.<sup>1</sup> Illustrations of the major types of transaction are given in the hypothetical economy of the present chapter.

The relation of each transaction to the national income statement is examined from three points of view. One is the effect on the factor-payment total. The second is the effect on the final-product total. The third is the effect on two sub-items, investment and saving. This third analysis to some extent overlaps the other two. It involves factor payments in computing the amount of saving, and final product in computing the amount of investment. The reasons for emphasizing the computation of investment and saving are deferred to Chapter 8, but it will be noted that, by definition, the total of saving and the total of investment for the economy must be equal. And the illustrations will show that this equality also holds for any one transaction, though not necessarily for either one of the two persons in the transaction. The equality of saving and investment forms the conceptual basis for much of the economic analysis that utilizes the national income data.

Table 1, on pages 50–53, is a statement of the kind that is to be found in the national income estimates as presented by Kuznets, the Department of Commerce, and other estimators, except that they do not, of course, show the amounts for each individual person in the economy. An inspection of Table 1 before starting on the transaction-by-transaction analysis below will help to give meaning and direction to that analysis. And after a transaction has been studied, reference back to Table 1 will aid in understanding how that particular

<sup>1</sup> A suggestion that all business transactions be recorded on forms especially designed for national income accounting is noted in J. B. D. Derksen, *A System of National Book-keeping [in the Netherlands]* (1946), p. 3.



type of building block fits into the entire structure. To facilitate this kind of integration of the discussion with the table, some of the paragraphs have been provided with cross-references to the appropriate items in the table.

The first kind of transaction to be illustrated is the payment of wages to an employee whose work results in an addition to a manufacturing concern's stock of goods (inventory). The scope of the analysis is then broadened to take in other business units, from a farmer to a retailer. Each individual in the economy is considered in his dual role of producer and consumer. The amounts specified are not typical in any sense, absolutely or relatively.

### I. MANUFACTURING CONCERN M

#### A. Capital Formation

2. A manufacturing firm, M, pays an employee, W, \$2000 in wages for working into a finished product some raw materials that the firm owns. The raw materials are valued at \$1900, the cost to the firm. Consequently, the finished product is carried in the inventory at \$2000 + \$1900, or \$3900. The outlay on wages has been "capitalized" in the sense that the outlay is deemed to result in an asset that can be entered on the balance sheet. The asset side of the firm's balance sheet (except for a machine, to be introduced in § 8), before and after the work and payment, is as follows:

| Before               |               | After                |               |
|----------------------|---------------|----------------------|---------------|
| Cash on hand         | \$3500        | Cash on hand         | \$1500        |
| Inventory:           |               | Inventory:           |               |
| Raw material         | 1900          | Finished product     | 3900          |
| Total current assets | <u>\$5400</u> | Total current assets | <u>\$5400</u> |

The liabilities side of M's balance sheet will be introduced in § 6.

*Factor-payment approach.* The resulting increment to national income for this period, measured by factor payment, is the worker's wages, \$2000. The business concern has as yet earned no income. Its total of assets is unchanged, and no change has occurred on the liabilities side of the balance sheet. Hence the net worth of the concern is the same as before. Its sales are zero; its outlays, \$2000; its beginning inventory, \$1900; its ending inventory, \$3900; its net profit, therefore, zero.

*Final-product approach.* The increment to national income is that

part of the finished product that represents an advance over the raw-materials stage. This part of the finished product may not be easily isolated or identified physically. Economically, it is shown by the increase in non-money assets on the balance sheet of firm M.

In Table 1, pages 50–53, the payment to W appears in column W, section I, line 1. It does not appear explicitly in column M, but is reflected, along with all the other items affecting M, in the profit or loss figure, section I, line 3.

**3. Investment.** The creation of this additional value in the form of a non-money asset is an act of “investment,” or “capital formation,” in national income terminology. Investment here amounts to \$2000. The finished product, even though it is ready to be consumed, is considered “capital goods,” so long as it forms a part of the business, by being held in inventory as part of the concern’s stock-in-trade.

In national income analysis the term “investment” has a special meaning, different from that usually given it in financial markets. “Investment” is the act of parting with money to obtain an asset. Correspondingly, “disinvestment” is the act of surrendering an asset for money. In these definitions, “asset” refers to tangible goods and to intangibles like good will or patent rights. “Asset,” in this sense, does not refer to the representative intangibles, like stocks and bonds, which merely represent claims to a share in the underlying assets — the tangible property, good will, and so on. The shares of stock, bonds, notes or accounts payable, and other money claims can be included along with the term “money” for the purposes of the definitions above. National income analysis is interested in production, and it reserves the term “investment” for the kinds of things that imply production, either current or past. The purchase of a share of stock, even if it is newly issued stock, is not an act of investment, in national income terminology.

As in the present discussion, the word “investment” may be used to denote either the act of producing (or acquiring) assets, or the amount so produced (or acquired).

There are only two ways in which anyone may perform an act of investment: by purchasing an already existing asset from someone else or by causing an asset to be produced. If the buyer invests by purchasing an already existing asset, the seller disinvests. For the economy as a whole (buyer and seller together) no net investment

occurs in such a case. But where the asset is acquired by creation, no one disinvests. The manufacturing firm M performs an act of investment by parting with \$2000 to cause an asset to be created. The wage earner experiences no disinvestment; he parts with no asset. Hence, for the economy as a whole, net investment of \$2000 occurs.

Similarly, "capital formation," in national income terminology, ordinarily refers not to the forming or grouping of money capital, but to the construction of buildings, plant, machinery, roads, and to the building-up of inventories—in general, to any activity that results in an increased amount of (non-money) assets on a business concern's balance sheet. It even includes the building of houses for home-owners (§ 18), who commonly do not draw up balance sheets.

The term "capital formation," as usually employed, is therefore synonymous with "investment." It is used more often with respect to the economy as a whole than in describing the actions of a single firm. And sometimes it is used, even in national income discussions, to denote the grouping of money capital.

**4. Saving.** The wage earner, so far as this example has gone, saves \$2000 for the time being. "Saving" is defined as the excess of income received over expenditure for consumption during a given period. The worker W has an income of \$2000 and a consumption expenditure of zero (so far); hence, a saving of \$2000. In computing the saving of a business firm, consumption is always entered as zero, for a business firm, as such, cannot spend money for consumption; only the ultimate consumer can do so. In the present instance the business firm M shows income of zero and consequently saving of zero.

The term "saving" sometimes refers to the act of not spending income, rather than to the amount of income not spent.

**5.** The inventory of raw materials of \$1900 shown in § 2, before M worked them into a finished product, had been in part (\$400) carried over from the previous year. The rest of it had been purchased earlier in the current year from farmer F for \$1500. This purchase drew down M's cash by that amount, and was an act of investment by M. It would have been recorded as an act of equal disinvestment by F if he had kept a balance sheet and had been carrying these raw materials at \$1500. However, the discussion of F below (§§ 17–20) will assume that he keeps only simple cash accounts. The implications for national income, net saving, and net investment are explored below in the section devoted to F.

### B. Expensed Outlay

6. The manufacturing firm M pays a night watchman, N, \$1000, primarily to guard the concern's office, not the factory building. This payment decreases the "cash" item in M's assets by \$1000. Unlike the outlay on wages for the worker W, it does not immediately give rise to an increase in value of any other asset. Under the accounting method used here, the watchman's work is not considered specifically devoted to any particular asset; for example, it is not to be regarded as becoming embodied in and hence adding to the value of the finished goods. This outlay on wages is said to be "expensed," instead of "capitalized." An outlay is "expensed" when it is considered as not increasing the value of any of the assets. For the time being, therefore, the decline in cash is balanced by writing \$1000 off the amount of the surplus on the liabilities side of the balance sheet. The balance sheet, before and after, is as follows (except for a machine, to be introduced in § 8):

|                             | Before       | After        |
|-----------------------------|--------------|--------------|
| Assets                      |              |              |
| Cash on hand                | \$1500       | \$500        |
| Inventory: Finished product | 3900         | 3900         |
|                             | <hr/> \$5400 | <hr/> \$4400 |
| Liabilities                 |              |              |
| Capital stock and surplus   | \$5400       | \$4400       |

*Factor-payment approach.* The concern has lost \$1000 for the time being (sales, zero; expenses, \$1000; change in inventory, zero). It expects to make up this loss, of course, when it sells the inventory at a price well above \$3900. The night watchman has an income of \$1000. For the economy as a whole (M and N) the resulting increment to national income is therefore zero. This is always the temporary result when a business concern's outlay on a factor of production is expensed.

*Final-product approach; saving and investment.* No product has appeared as yet. There is no investment in this transaction. N saves \$1000. M, having an income of minus \$1000, has a negative saving; that is, a negative excess of income ( $-\$1000$ ) over consumption expenditure (0). This  $-\$1000$  of saving may be termed \$1000 of dissaving. Added to N's \$1000 of saving, it gives zero saving for the economy as a whole.

7. The manufacturing concern M pays a salary of \$4000 to E, its executive, creating for him an income item of \$4000. The balance sheet immediately above shows only \$500 cash on hand. To avoid complicating the illustration unnecessarily, it is assumed that E's salary is not paid until the cash item has been replenished from the proceeds of sales, to be detailed in § 15.

*Factor-payment approach.* The concern is considered to have suffered a temporary loss of \$4000, since executive salaries are usually expensed, not capitalized. The increment to national income is therefore zero.

*Final-product approach; saving and investment.* There is no product as yet. E saves \$4000 (so far); the concern dissaves \$4000; and there is no investment.

### C. Depreciation and Obsolescence

8. In working the raw material into the finished product, M uses a machine. The machine cost \$5000 in a previous year. It is assumed to have a ten-year life with zero salvage value under an ordinary rate of output, such as prevails during this period. Under the usual "straight-line" depreciation formula it follows that any one year's product is charged with \$500 depreciation ( $\frac{\$5000}{10 \text{ years}}$ ). The raw material is considered as receiving an increment of cost of \$500 from the machine; the machine gives off, so to speak, a part of its value, which becomes embodied in the finished product. The machine had already lost \$1000 of its value in previous years of use, so it was carried among the assets at \$4000 as the current year opened. When the use of the machine during the current year is taken into account, the assets of the balance sheet develop as follows:

|                  | Before Taking into<br>Account Use<br>of Machine | After Taking into<br>Account Use<br>of Machine |
|------------------|---|--|
| Inventory:       |   |  |
| Finished product | \$3900  | \$4400   |
| Machine          | 4000  | 3500   |

*Factor-payment and final-product approaches; saving and investment.* Through wearing down the machine by \$500 to build up the inventory by an equal amount, the firm has merely altered the composition of its assets. The wearing-down of the machine produces disinvestment; the building-up of inventory, investment. Hence the

firm has neither invested nor disinvested, on balance. There is no income, and no saving.

In Table 1, pp. 50–53, the depreciation of \$500 appears nowhere explicitly in section I, since it is not a factor payment, though it is of course one of the many items that influence the amount of profit shown in line 3 under M. In section IV of the table it is part of the \$1300 item in line 15, column M.

9. A machine may depreciate even when it is not being used. The depreciation is then commonly regarded, not as adding to the value of any other asset, but simply as giving rise to a loss. In terms of the illustration above, the inventory would stay at \$3900, the machine would decline to a value of \$3500, and the compensating entry would be a decrease of \$500 in surplus.

*Factor-payment approach.* The case would resemble that of the payment to the night watchman, except that here no one would be receiving an income. There would be no offset to the firm's \$500 loss. The increment to national income would be a negative amount: minus \$500.

*Final-product approach; saving and investment.* The product increment would be negative; wealth would have declined by \$500, as shown by the decrease in the value of the machine. The firm's dissaving would be \$500, and so would its disinvestment.

10. A concept widely used in the United States computations is that known as "gross national product," which measures income before rather than after subtracting depreciation. In § 8, the \$500 depreciation of the machine would be disregarded, according to this concept. The \$500 increase in value of inventory would be \$500 of gross national product. In § 9, the increment to gross national product would be zero, not a minus item.

One other major difference between national income and gross national product concerns business taxes, a point which is illustrated in Chapter 4, §§ 9, 10. Some additional minor differences are noted in Chapter 6, where the usefulness of the gross national product concept is critically examined.

11. The amount of depreciation charged off under prevailing methods of accounting is somewhat arbitrary and often not closely in accord with the physical or economic facts. Moreover, the part of the depreciation charge that is expensed, and hence tends to create a temporary net loss rather than being added to the value of the in-

ventory, is in some respects arbitrary. These elements of arbitrariness or error are reflected in the totals for profits, investment, saving, and national income (but not in the figure for gross national product), for any one year rather than for a number of years together.

12. The concern M also records obsolescence of \$800 during the year. Obsolescence usually means loss of value owing to improvements in competing products or improvements in competing methods of producing the same product. Like depreciation on idle machinery, obsolescence customarily is not capitalized, even if it is expected. Hence it gives rise to a loss, and is in itself a negative entry in national income. The balance sheet, before and after, is as follows (including now both the machine and the other assets):

|                           | Before Obsolescence<br>(but after Depreciation) | After Obsolescence<br>(and Depreciation) |
|---------------------------|---|--|
| <b>Assets</b>             |   |  |
| Inventory:                |   |  |
| Finished product          | \$4400  | \$4400                                   |
| Machine                   | 3500  | 2700                                     |
| Cash                      | 500   | 500                                      |
|                           | <hr/> \$8400                                    | <hr/> \$7600                             |
| <b>Liabilities</b>        |   |  |
| Capital stock and surplus | \$8400  | \$7600                                   |

*Factor-payment approach.* The increment to national income is negative, because sales are zero and expenses are \$800; hence the concern shows a loss of \$800.

*Final-product approach; saving and investment.* The minus \$800 increment to national income is seen in the decrease in the balance-sheet value of the asset "machine." Disinvestment is \$800 and dissaving is \$800.

The increment to gross national product, since that concept disregards obsolescence as it does depreciation, is zero in this case.

In practice, much obsolescence is not foreseen, or at least occurs in a large amount in some one year, and when this happens the income accounts of business firms sometimes do not show it in computing "net" income. To the extent that the accounts are thus inadequate, national income is overstated.

#### D. Interest Paid

13. The concern M pays interest of \$200 on its bonds held by E.

This outlay, too, is not capitalized. Neither is it "expensed," in accounting terminology; but, what comes to the same thing for national income analysis, the interest paid is subtracted after computing operating income, to reach net profit. The effect on the national income accounts is similar to that produced by the payment of salary to the executive E (§ 7).

14. The concern M also pays \$100 interest on its bonds held by non-residents.

*Factor-payment approach.* The accounts of non-residents do not, by definition, appear in the total of "national" income. Hence the loss suffered by M in paying interest is not offset by any income item elsewhere in the national accounts, as it is when interest is paid to the executive E. The increment to national income is therefore negative: minus \$100.

*Final-product approach; saving and investment.* M is considered to have "disinvested" \$100. M has not, indeed, surrendered a non-money asset (§ 3). But it has done much the same thing, from the point of view of the national economy. It has surrendered to non-residents \$100 worth of command over the goods and services of the economy. In national income accounting, a decrease in the amount of the money of other countries held by residents of the country in question is a disinvestment by that country. Likewise, disinvestment occurs if there is an increase in the net amount of the nation's money held by non-residents. From the product approach, consequently, there is a minus \$100 increment to national income because the residents of the nation have lost control over power to purchase \$100 worth of its product. Since the concern M shows a negative income of \$100, it dissaves \$100.

#### E. Sales, and Profit or Loss

15. Of the total finished product carried in its inventory (at cost, \$4400; see § 8), M sells a part, cost \$3200, to the retail general store G for \$9000. M also exports for \$800 another part of the finished product, carried in the inventory at \$700. M's remaining inventory is therefore \$500. The consequences of these transactions are noted in the next paragraph, which summarizes M's activities.

16. *Factor-payment approach.* In summary, the factor payment to the manufacturing concern M is negative: a loss of \$200. The income statement shows the following items:



|   |                  |                 |
|---|------------------|-----------------|
| Sales   |                  | \$9800 (§ 15)   |
| Cost of goods sold:                                   |                  |                 |
| Wages   | \$2000 (§ 2)     |                 |
| Depreciation  | 500 (§ 8)        |                 |
| Materials purchased                                   | 1500 (§ 5)       |                 |
| Excess of opening inventory<br>over closing inventory | — 100 (§§ 5, 15) |                 |
| Total cost of goods sold                              |                  | <u>3900</u>     |
|   |                  | \$5900          |
| Other expenses  |                  |                 |
| Wages   | 1000 (§ 6)       |                 |
| Salary  | 4000 (§ 7)       |                 |
| Obsolescence  | 800 (§ 12)       |                 |
|   |                  | <u>5800</u>     |
| Operating profit                                      |                  | 100             |
| Interest  |                  | 300 (§§ 13, 14) |
| Net profit  |                  | <u>\$ - 200</u> |

*Final-product approach.* A summary from the product side likewise shows a negative entry of \$200. The \$200 decrease in final product cannot be identified by taking any single item. The following product has been produced: sold to the general store G, \$9000; exported, \$800; increase in inventory, \$100. The following product has been used up in this act of production: decrease in value of machinery, \$1300; interest paid to non-residents (a decrease in "product" from the nation's point of view), \$100. The balance is a net output of product of \$8500. Of this, \$1500 represents product obtained from the farmer F. Another \$7200 worth of product was produced by the employees and domestic creditors, judging by the amounts going to them in factor payments. There is left a deficit in product of \$200.

*Saving and investment.* With respect to investment and saving, the concern has disinvested \$500 and dissaved \$200. It shows an investment of \$100 in inventory, a disinvestment of \$1300 in the machine (valued at \$4000 at the start of the year — § 8 — and \$2700 at the end — § 12), and a change of \$700 in its favor in its foreign balance (— \$100 in § 14 and + \$800 in § 15), or a net disinvestment of \$500. Its saving, defined as its net income (— \$200) minus zero consumption, is a dissaving of \$200. For corporations a further element is injected in defining saving. Dividends paid out are subtracted; only the re-

mainder is said to be saved by the corporation. In the present instance, however, dividends are zero, so dissaving remains \$200.

## II. FARMER F

17. The farmer F, who sells the raw materials to the manufacturing firm M for \$1500 (§ 5), uses a simple cash-accounting system. Since he does not draw up a balance sheet, his books imply that every outlay is expensed. He pays \$200 rent for farm land to an individual owner O. The \$200 is both gross and net rent; it is assumed that O incurs no expenses with respect to the land. The \$200 net rent increment to national income is offset by the loss of \$200 suffered by F so far as this transaction, viewed in isolation, is concerned.

18. The farmer owns some of the farm land that he works, and the farmhouse. The house would rent for \$150 a year. It depreciates \$100 during the year. The depreciation might be considered as due to the business of farming, but it is here counted as due to personal consumption; that is, the supplying of shelter to the farmer and his family. The imputed gross rental value (\$150) and the depreciation (\$100) do not ordinarily appear in the farmer's accounts. Yet, if the farmer were a tenant instead of a home-owner, the \$150 he would pay would appear in the gross income of the landlord. It would appear also in the total of the farmer's expenditures for consumption. The landlord, subtracting \$100 for depreciation, would show a net rental of \$50. Consumption of \$150 would have occurred, made possible to the extent of \$100 by the destruction of existing assets, and to the extent of \$50 by the creation of national income by the landlord. The \$50 net rent or net profit would be considered a reward for services rendered by him in this period. To allow the accident of home-ownership rather than tenancy to alter these national income figures is held to be inadmissible; hence an estimate is made of the imputed gross rental and the imputed and actual costs.

*Factor-payment approach.* The home-owning farmer is considered to receive a gross income of \$150 and suffer depreciation of \$100. He therefore receives a net imputed rental of \$50, which is an increment to the national income.

*Final-product approach; saving and investment.* The final product takes the form of a service (shelter) "purchased" by a consumer. Saving is negative (\$50 income minus \$150 consumption expenditure). Investment is negative to the same amount (depreciation), \$100.

In the earlier year when he acquired the house, the farmer was not considered as spending for consumption the money that he laid out to have the house constructed or to purchase it from someone else. His outlay was capitalized; a balance sheet was presumed to be drawn up. The wages of the workmen who built the house appeared in the national income of that year.

As to that part of the land that the farmer owns outright, the income it brings him will be reflected in an increased spread between the sales proceeds of his product and his money expenses. Hence no estimate of imputed land rent is needed to reach the correct total of national income. However, this rent element will appear in the form of "profit," not rent. If the farmer rented this land from an individual, his own profit would be correspondingly less and an increment to "net rent" would appear in the national income accounts. If he rented the land from a corporation, the payment would appear as a part of "corporate profits." Thus, the size of the "net-rent" sub-total in the national income total compared to the "profits" sub-total depends largely on prevailing methods of holding real estate.

**19.** The farmer's family consumes \$300 worth, at farm prices, of the produce grown on the farm. Such an item is commonly not recorded in the farmer's books of account. Nevertheless, it represents production (hence national income) and consumption, and must be estimated if precise records are not available. The farmer is considered to be buying this produce from himself, at cost. His sales figure is increased from \$1500 to \$1800, and his net income is likewise written up by \$300. He "spends for consumption" all of this \$300. Consequently, the national income is increased by \$300 whether measured from the factor-payment approach (net profit increases \$300) or from the product approach (consumer goods are increased \$300). Saving and investment are unchanged.

**20.** The farmer F also purchases \$500 worth of farm supplies from the general store G, and \$800 worth of personal supplies — food, clothing, household goods.

*Factor-payment approach.* In summary, F has a gross income of \$1950, consisting of \$1500 sales to manufacturing firm M, plus imputed gross rent of \$150 and \$300 imputed gross receipts from farm products consumed on the farm. His business expenses are \$800, consisting of farm supplies (\$500), land rent paid (\$200), and \$100 imputed expense from depreciation of his house incurred in the business of "renting"

his house to himself. His net income is \$1150. He is considered to have created \$1150 of national income, as shown by this factor payment of \$1150. This reward will commonly be classified as \$50 net imputed rent and \$1100 net profit. But the net profit includes the rental value of his own farm land, and therefore in principle might be split between profit and net rent. In any event, the \$1100 profit probably reflects much more the farmer's own labor than a payment for ownership. A large part of it might better be included under wage-and-salary income in the national income accounts. There have not yet been devised, however, accurate enough methods of measuring the wage-salary element in the "profit" total of unincorporated enterprises.

*Final-product approach.* The increment to national income of \$1150 is reached by considering that the farmer has sold \$1950 worth of product during the year (including \$450 worth of imputed product sold to himself), which was produced partly by calling on other persons for their services or material (individual owner O's land, \$200; supplies from general store G, \$500) and partly by wearing down an asset (depreciation on own house, \$100), so that only the remaining part of the product represents his own production. The gross national product created by the farmer is \$1250.

*Saving and investment.* The farmer's net income is \$1150 and his expenditures on consumption total \$1250 (imputed on house, \$150; imputed on farm produce, \$300; goods purchased, \$800). Hence he dissaves \$100. With respect to his farming activity proper, his gross investment is zero and his gross disinvestment zero also, since he keeps no balance sheet and expenses all outlays. But with respect to his activity in the real estate business, renting his house to himself, balance-sheet accounting is imputed to him, and he shows a disinvestment, from depreciation, of \$100.

### III. OTHER NON-FINANCIAL BUSINESS CONCERNS

**21.** A private school corporation, S, is formed in the preceding year by an investor, I, its sole owner. It starts the current year with \$2000 cash on hand. It borrows \$10,000 from a mutual savings bank, BB, and \$2000 from the executive, E, of the manufacturing concern. Drawing down its own cash by \$1000, it constructs a building at a cost of \$13,000, by paying four building workers, BW, \$1500 each and purchasing \$7000 of materials from a building materials wholesaler,

X. This outlay is capitalized as an investment expenditure; the school corporation changes the composition of \$1000 of its assets (cash into building) and expands its assets \$12,000 by assuming liabilities of the same amount.

The building is finished and the school opens early in the year. Tuition fees of \$800 are received from the executive E, \$800 from the proprietor O, and \$500 from the investor I. A teacher, T, is paid \$1500. Interest on the loan from the executive E takes \$80, and on the loan from the savings bank BB, \$280. Depreciation of \$200 is recorded. Thus, the year's gross income is \$2100; expenses, \$2060; and profit, \$40. No dividends are paid.

*Factor-payment approach.* As a result of all these activities, national income is increased at least by \$40 profit plus the wages of the building workers, the wages of the teacher, and the interest payments. The total increment to national income, regarded as factor payments, is therefore \$7900. Whether the purchase of the building materials gives rise to any income for this year cannot be known until the accounts of firm X are examined in a subsequent paragraph.

*Final-product approach; saving and investment.* The increment to national income of \$7900 is computed by adding the two products turned out — the school building, \$13,000, and the teaching service, \$2100 — and subtracting the products used in the process — \$7000 of building materials and \$200 of the building itself. Gross investment by S is \$13,000, depreciation is \$200; hence net investment by S is \$12,800. Corporate saving by S is \$40.

**22.** The building-materials wholesaler, a corporation, X, starts the year with inventory of \$10,000, ends it with \$4000, and incurs no expenses at all. Its \$7000 sale to the school S is therefore made wholly by drawing down inventory \$6000. The difference, \$1000, is recorded as national income. It is profit, a factor payment presumed to be due to the activity rendered during the year in making the sale. The increment to national income viewed as product is \$7000 produced and sold to S, minus the \$6000 of materials drawn from the stockpile to make the sale. X has disinvested \$6000 and produced \$1000 of product to match S's investment in building materials of \$7000. X pays no dividends; hence corporate saving is \$1000.

**23.** A corporate automobile dealer A, like the building-materials concern X, makes a sale by drawing down its inventory. It sells a car to owner O for \$1000. At the start of the year its inventory con-

sists of cars with a cost value of \$15,000; at the end of the year, \$14,200. Its profit on the \$1000 sale to O is therefore \$200. It pays no dividends.

**24.** A real estate corporation L, wholly owned by the investor I, rents a store building to the general store G and a dwelling to the manufacturing worker W, receiving \$200 from the former and \$250 from the latter. Depreciation on these two properties totals \$300, and there are no repairs or other expenses this year. Hence L's profit, its factor payment in national income, is \$150. From the product approach, L is considered to render services worth \$450, of which \$300 is obtained by wearing out existing assets. It pays \$200 in dividends; corporate saving is therefore minus \$50. It disinvests \$300 (depreciation).

**25.** O, an individual, is the sole owner of seven dwellings rented to various members of this hypothetical economy.

*Factor-payment approach.* The gross rentals are: from E, \$800; N, \$300; the four building workers, BW, \$300 each; and a retired clerk, C' (§ 41), \$200; a total of \$2500. The only business expense of O this year is depreciation, \$1600. Hence his net rental from the dwellings is \$900. He also receives \$200 from farmer F as rent of farm land. Consequently, the national income received by O, viewed as a factor payment, is \$1100.

*Final-product approach.* O is considered to have sold \$2700 worth of product, obtained partly by wearing out already produced assets (\$1600). The product he sells is not tangible; it is the use of land and buildings. Part of it — the land rent — becomes embodied in the tangible results of the farmer's activities, the raw materials he sells. The rest of O's product is already in its final form, a consumer service rather than consumer goods.

**26.** O is an equal partner with the investor I in a general store G. The profits of the store, as will be shown below (§ 43), are \$4580 for the year. O draws out of the business for his personal use only \$300 of his \$2290 share. However, prevailing national income accounting does not distinguish such withdrawals. It notes only the share in the profits, and counts it all in the partner's personal income for the year. Earlier attempts to divide entrepreneurial profits into withdrawals and profits retained in the business have not been maintained because of scantiness and unreliability of data. The term "entrepreneurial," as it appears in United States discussions of national income, has a

special sense, much narrower than in general economic discussions; it refers only to owners of unincorporated concerns.

O owns his home, which has a gross rental value of \$500 and depreciates by \$300.

*Factor-payment approach and final-product approach.* Consequently, O's total net income is \$3590: net rental from dwellings, \$900; land rent, \$200; share in store profits, \$2290; imputed net rent, \$200. The total product that he turns out himself consists of the services of the dwellings and land, worth  $\$900 + \$200 + \$200$ , or \$1300 after subtracting depreciation.

27. As co-owner in the partnership G, O is here credited, in his personal accounts, not only with his share of the partnership's profits, but also with his share of its saving and investment. These amounts are given in § 44.

#### IV. CONSUMERS

28. The automobile that owner O purchases for his private use for \$1000 (§ 23) has an estimated gross rental value of \$350. It depreciates by \$300 during the year. Under prevailing methods of national income accounting, however, this \$1000 outlay is treated as an expenditure for consumption. In principle, it could be treated as is the outlay for a house; the \$1000 could be considered an expenditure for investment, not consumption. During each year of use, a gross rental value would be estimated. From this would be subtracted the depreciation and repairs, giving a net imputed profit or loss. Consumption each year would equal the gross rental value. The only reason for not so treating the automobile, or all other consumer goods that last more than a year, in addition to houses, is the difficulty in gathering or estimating these annual data.

By counting the entire outlay as a consumption expenditure in the year of purchase, the accounts overstate the actual amount of consumption in that year and understate it for later years. Also, the accounts fail to show any net imputed rent for the current and later years, and to this extent national income (and consumption) even over a period of years is understated. For some of the years national income may be overstated, since the depreciation and obsolescence of the automobile may prove to be greater than its gross rental value.

29. O spends \$1200 on food, clothing, and household supplies, at the general store G. Because he is a part owner of the store, he

gets a 20 per cent discount; any other consumer (except his co-partner I) would have to pay \$1500. In principle, O might be considered as receiving \$300 hidden profit. To bring this profit into the open, G's sales would be increased by this imputed \$300, and its profit likewise; the \$300 extra profit would be credited, to O as a partner in the concern, and his consumption would also be marked up \$300. National income would be increased by \$300. On the other hand, it may be argued that the extra \$300 obtained in a normal sale represents largely the added effort needed to sell to ordinary customers. So far, the arguments against inclusion have weighed more heavily with the national income analysts than those for inclusion. It is difficult to get data even on the wholesale value of "sales" to the store owner. In many cases he does not go through the formality of recording a sale, but simply takes the goods off the shelves, so that the firm shows a smaller profit or a larger loss by the full amount of these goods.

O also spends \$800 for tuition at the private school S.

*Saving and investment.* The consumption expenditures of owner O therefore total \$3500: house, \$500 (§ 26); car, \$1000 (§ 28); food, clothing, and household supplies, \$1200; tuition, \$800. His total net income is \$3590 (§ 26). His saving is therefore \$90.

He engages in no gross investment during the year. He disinvests, to the extent of \$1900, through depreciation on the houses he rents to others and the house in which he lives. Hence his net disinvestment is \$1900, apart from the foreign disinvestment by his firm G, the general store, to be noted in § 44.

**30.** Each of the four building workers BW spends \$1200 on food, clothing, and supplies at the store G, and pays \$300 rent to owner O, saving nothing from his \$1500 wages.

**31.** During the year the night watchman N borrows \$100 from the executive E and pays him \$8 interest. N applies the loan to personal expenses not connected with the acquisition of any durable asset that might be considered to yield imputed rental. Although opinion is somewhat divided on the treatment to be given such an interest payment, the prevailing practice is to consider it not a payment for production, hence not an element in national income. Consequently, it is excluded from the accounts in the present illustration.

The night watchman spends \$800 at the store G and pays \$300 rent to owner O. Since his wages are only \$1000, he dissaves \$100.



**32.** The teacher T at the school S owns his home, which has an estimated gross rental value of \$200. The estimated depreciation during the year, however, is greater than this rental figure; it is \$300. T spends \$1200 on food and other items at the store G. His salary is \$1500.

*Factor-payment approach.* T's total factor payment is \$1400, made up of his salary (\$1500) and a negative imputed rent of \$100 on his house. He holds a house worth only \$200 a year that depreciates \$300 a year.

*Final-product approach.* His services have a value of \$1500, but in his capacity as landlord he decreases wealth by \$100.

*Saving and investment.* His consumption expenditure for dwelling accommodation might seem to be \$300, but it is only \$200; viewed as a consumer buying from himself, he spends only \$200 (gross imputed rental value). His saving, so far as the house alone is concerned, is income ( $-\$100$ ) minus expenditure on consumption ( $\$200$ ), or  $-\$300$ . His saving on money transactions is a positive \$300, so his total net saving is zero. His investment is  $-\$300$  (depreciation).

**33.** The worker W at the factory M spends \$30 on work clothes and \$1670 on other clothing, food, and house supplies at the store G. He rents a house from the real estate corporation L for \$250.

*Saving and investment.* W's expenditures for personal consumption are considered to be \$1950, not \$1920. National income accounting does not count expenditures for work clothing and similar items as chargeable against wages or salary in computing net income. If it did, national income in this hypothetical economy would be \$30 less than it is now computed to be. W's wages are \$2000, his saving is \$50, his investment zero.

**34.** The executive E of the manufacturing concern M receives \$8 interest on the \$100 loan made to the night watchman N for personal living expenses, but this is not counted in national income as a factor payment (§ 31).

*Factor-payment and final-product approaches.* E also receives \$200 interest on bonds of the manufacturing firm M, \$80 interest on his \$2000 loan to the private school corporation S, \$4000 salary from M, and \$140 salary from the savings bank BB, making total receipts \$4420. Each of these items represents a net factor payment and also a product, a type of service.

*Saving and investment.* E spends \$800 tuition at the school S, \$2000

on food and other items at the retail general store G, and \$800 on rent to the individual owner of real estate O. Consequently, he spends \$3600 on consumption and saves \$820. His investment, gross and net, is zero.

**35.** C is a clerk employed by the general store G. He owns his home, and pays \$300 interest and \$200 amortization on a loan from the savings bank BB. The depreciation for the year is estimated at \$240; the gross rental value, \$600. The amortization payment does not affect the national income accounts; it is simply an exchange of one type of "money" (cash) against another (debt) (see § 3). C's consumption expenditure on housing is therefore \$600, and his net imputed income from owning the house, \$60.

C is credited with \$40 interest on his deposit in BB, but this is not counted in his personal income (see § 36). He spends \$1600 on food, clothing, and household supplies, buying them from the store G at retail prices. A summarization of C's accounts is postponed until the contributions to his pension fund can be considered (§ 40).

#### V. SAVINGS BANK AND COMMERCIAL BANK

**36.** Corporation BB is a mutual savings bank. For simplicity in illustration, it is assumed to have no expense aside from \$140 a year salary to the factory executive E, who spends part of his time managing the affairs of the savings bank.

During the year the savings bank purchases securities from the investor I, at a cost of \$4000, and makes a loan of \$10,000 to the private school corporation S, of which I is the sole owner.

In an earlier year the savings bank made a loan of \$6000 to the clerk C in the general store, on a mortgage on his home. During the year the bank receives \$300 interest and \$200 amortization on C's mortgage, and \$280 interest on the loan to S. The savings bank has only two depositors, C and I. It credits the former with \$40 interest and the latter with \$400.

If the savings bank were like the usual business, the interest received might be considered its gross income, the executive's salary an expense, and the remaining \$440, net income to the depositors. All these transfers together would produce \$580 of national income: \$140 salary and \$440 interest paid to individuals. But this reckoning would drop something out that belongs in national income. The savings bank differs from the usual private business firm, for it gives services away, free of direct charge.

In effect, it acts as an investment counselor and manager for the individuals by taking their liquid funds and putting these funds out to earn interest and dividends, and it does this without any direct charge. The bank also supplies passbooks and other services free of charge.

*Factor-payment approach.* It is as if the two depositors C and I had invested their funds themselves, received the \$580 interest themselves, and then paid E \$140 salary. The salary payment would be a personal expenditure by C and I for investment advice and service. The increment to national income is therefore \$720. This result may be achieved in the computations by ignoring the \$440 actually credited to the depositors C and I. Instead, the full \$580 is entered as if it were received by C and I as investors, jointly. The \$140 salary is also included as a factor payment to E. In practice it will not be possible to isolate C and I as individual investors. The \$580 investment income may be credited instead to the savings bank, considered for this purpose as an "aggregation of individuals." There is no profit item for the bank, it being a mutual savings bank.

*Final-product approach.* Two sets of product are involved in this instance. One consists of the services yielded by the house that C lives in and the school building. Part of the services rendered by these two buildings is reflected in the \$580 interest income received by C and I, or rather by the savings bank on their behalf. In addition, there is the service rendered by the mutual savings bank; this is worth \$140, and is represented by the activity of the executive E.

*Saving and investment.* The treatment suggested here implies that C and I have a joint personal expenditure of \$140, purchasing personal investment advice. This consumption item must be entered somewhere in the national income accounts in computing total consumption expenditure. Ideally, it would be allocated between C and I. But in practice it will be necessary to say that the consumption expenditure is made by the savings bank itself as an aggregation of individuals. In Table 1 (§ 45) of this chapter, a \$140 "individual consumption expenditure" item will appear under BB — the only case in which a business firm is credited with "consumption" outlay. Similarly, BB will be shown to save \$440 as an aggregation of individuals, the difference between the \$580 interest income and the \$140 consumption outlay.

**37.** B is a commercial bank. It receives \$100 interest on a short-term loan of \$2500 made in the current year to the store G. It pays no interest to its depositors, and, for simplicity, is assumed to have no operating expenses. Its profit is, therefore, \$100, which it pays out in a dividend to its sole stockholder, I.

Like the savings bank, the commercial bank renders certain services free of charge, chiefly the handling of checking accounts. Like the savings bank, it receives interest on loans and investments that equal the deposits entrusted to it (disregarding reserve requirements and some other matters). It is as if the bank depositors received the \$100 interest as their individual incomes and then paid it to the bank for the services it renders. But in this instance such a payment would not be an expenditure for personal consumption. It would be instead a business outlay, for it is assumed here, for simplicity, that the commercial bank renders free services only to business firms.

*Factor-payment approach.* The \$100 interest is imputed to the depositors, who are unspecified business firms. This interest can be counted, in computing the total of factor payments, only if the imputed expenditure that these firms make in "purchasing" bank services is also included. Otherwise profits will be overstated. The same result is reached by ignoring the \$100 imputed item altogether. The profit of the bank, \$100, must be included in any case. Consequently, the total factor payment in this case is only \$100.

*Final-product approach.* Again, as in § 36, there are two types of product to consider, but the net result is different from that in § 36. There is \$100 of product consisting of credit accommodation, produced by B and sold to G, and transmuted by G into the product, retail service, which it dispenses. This product is represented by G's interest payment to the bank B. Then there is the service product that the bank B renders to its business-firm depositors in handling checking accounts, for example. This service is also worth \$100. But it cannot be included unless, in computing the products turned out by these firms, a corresponding subtraction is made for the using-up of this imputed product. As under the factor-payment approach, the correct total of product can be reached by ignoring the imputed product to business altogether.

*Saving and investment.* Corporate saving by the bank B is zero, \$100 profit minus \$100 dividend. Investment, gross or net, is zero.

The techniques adopted here with respect to the savings bank and

the commercial bank are somewhat arbitrary. A better understanding of the issues involved can be obtained from the discussion in Chapter 5, §§ 58-61.

## VI. INVESTOR: CAPITAL GAINS

**38.** The investor I owns all the stock in corporations A (automobile dealer), B (bank), L (real estate corporation), M (manufacturing concern), S (school), and X (wholesale building-materials dealer). He thus receives \$300 in dividends (\$100 from B — § 37 — and \$200 from L — § 24). The savings bank BB credits him with \$400 interest on a deposit, but for reasons given in § 36, this amount is not counted in his personal income. His income includes a one-half share (\$2290) in the profits of the general store G, of which he withdraws for his personal use \$300. Like the owner O, he spends \$1200 at store G for food, clothing, and household supplies, at 20 per cent below the retail price (§ 29). He pays \$500 tuition to the school S. He owns his home, which has a gross rental value of \$200 and which depreciates by \$200.

**39.** At the start of the year he holds securities with a market value of \$10,000. During the year he sells some of them to the mutual savings bank BB for \$4000; these securities cost him \$2000 in an earlier year, and were worth \$3000 (market value) at the start of the current year. The remaining securities, which cost him \$5000 in an earlier year, have a market value of \$7000 at the start of the year and \$8000 at the end. Consequently, the investor realizes a gain of \$2000 on the securities sold (of which \$1000 accrued during the current year), and at the end of the year he has an unrealized gain of \$3000 accrued on the remaining securities, of which \$1000 accrued during the current year. These amounts, however important they may be to the investor I — for example, in helping him to decide how much he can afford to spend on consumption during the current year — are ignored in national income accounting. Gains from the sale of representative intangibles (see § 3) are not considered an element of national income, and losses from the same source are not subtracted. Indeed, even gains from the sale of assets (as defined in § 3) are commonly regarded as "capital gains," and therefore not included, if the asset is something not held for sale in the normal course of business, as, for example, the land and building used by an enterprise. A corresponding amount of net investment is excluded, at least in money

terms, before correction by a price index. The problem of inclusion posed by such items is discussed in Chapter 5, §§ 33–37.

*Factor-payment approach.* I's individual income is therefore set at \$2590, but only \$2290 of this amount is national income. The \$2290 is payment for his risk-bearing and managing with respect to the partnership G. The rest of his individual income is dividends, already counted in national income as part of the profits of corporations.

*Final-product approach.* The counterpart of the \$2290 in terms of product consists of a part of the retail service rendered by the store G.

*Saving and investment.* I's saving is his individual income (\$2590) minus consumption (\$1900), or \$690. The dividends can be included in computing his income for this purpose, since they were subtracted in computing corporate saving. I disinvests \$200 through depreciation of his home, and to him may be attributed one half of the \$600 disinvestment by the store G, to be explained below (§ 44).

## VII. PENSIONNAIRES

**40.** The store G pays the clerk C \$2000 in wages. In addition it pays \$20 into a fund from which C will draw a pension when he retires. C also contributes \$20 to the fund.

*Factor-payment approach.* The \$20 that the store contributes to the pension fund is counted as current income to C. It is listed under "supplements to salary and wages," or some similar caption, in the current series of national income compilations. The total net income of C, therefore, is \$2020 plus \$60 imputed rent (§ 35), or \$2080.

*Final-product approach.* The net product produced by C is reflected by the services he renders to G, which become embodied in the products sold by G, and the net service he renders, as a landlord, to himself. The gross national product he produces is \$2320 (the part of the \$600 gross rental represented by the interest payment, \$300, is considered to be produced by the creditor, BB).

*Saving and investment.* Of C's total net income of \$2080, \$40 goes to the pension fund. In computing the total amount of saving done by the economy, this \$40 of saving may be attributed either to the employee or to the pension fund, but not, of course, to both. For convenience in tabulation, it is here attributed to the pension fund. C's individual income, as distinct from his total net income, is therefore considered to be only \$2040. He spends \$2200 (§ 35). Consequently, he dissaves \$160. Because of the depreciation occurring on his house, he disinvests \$240.

41. C' is a retired clerk, living on past saving and a pension of \$600 a year from the pension fund. He buys \$700 worth of food, clothing, and supplies at the store G, and pays \$200 rent to the owner O. His total net income (as a part of national income) is zero, since he is engaged in no activity. But his individual income is \$600. He spends \$900 on consumption; hence he dissaves at least \$300. The remaining \$600 of dissaving may be listed under his name or the pension fund, but not, of course, under both. For convenience in tabulation it is here listed under the pension fund.

42. The pension fund PF shows \$40 income from contributions. It is assumed to have no income from investments during the year, but if it did the income would be attributed to the fund, not to any particular individual. The payment of \$600 pension results in a net dissaving of \$560 by the pension fund. It undertakes no investment.

#### VIII. PARTIAL RECAPITULATION THROUGH ACCOUNTS OF GENERAL STORE G

43. The general store G is the only other entity in the hypothetical economy. All but one of its items can be assembled from the information given on the other entities above. Every one of G's items involves someone else in the economy, excepting only dealings with foreigners.

*Factor-payment approach.* The factor payment to the concern G is its profit (attributed one half to each of the two partners, O and I). The profit is computed in its accounts for the year as follows:

Sales to:

|   |                |
|---|----------------|
| 4 BW's (building workers, § 30)               | \$4800         |
| C (clerk, § 35)                               | 1600           |
| C' (retired clerk, § 41)                      | 700            |
| E (executive, § 34)                           | 2000           |
| F (farmer, § 20)                              | 800            |
| F (farmer, § 20)                              | 500            |
| I (investor, at 20% below retail price, § 38) | 1200           |
| N (night watchman, § 31)                      | 800            |
| O (owner, at 20% below retail price, § 29)    | 1200           |
| T (teacher, § 32)                             | 1200           |
| W (worker, work clothes, § 33)                | 30             |
| W (worker, other expenditures, § 33)          | 1670           |
| Total   | <hr/> \$16,500 |

|  |        |               |
|--|--------|---------------|
| Expenses:  |        |               |
| Interest to commercial bank B (§ 37)                       |        | \$100         |
| Rent to real estate corporation L (§ 24)                   |        | 200           |
| Purchases from manufacturing firm M (§ 15)                 |        | 9000          |
| Wages to clerk C, including payment to pension fund (§ 40) |        | 2020          |
| Imports  |        | 600           |
| Inventory  |        |               |
| Start of year  | \$4000 | }             |
| End of year  | 4000   |               |
| Total  |        | <u>0</u>      |
| Profit   |        | <u>11,920</u> |
|  |        | \$4,580       |
| Withdrawn by I   |        | \$300         |
| by O   |        | 300           |

*Final-product approach.* The product corresponding to this \$4580 cannot be isolated physically. It consists of the service of retail trading, a service embodied in the things the customers buy.

**44. Saving and investment.** In this illustrative example, a partnership or a sole proprietorship is not itself an independent entity. Unlike a corporation, it is not listed in the present set of accounts as itself receiving income, or performing saving or investment. These activities are attributed to the owners. The partnership as a whole shows a net income of \$4580; this has been entered under I (\$2290) and O (\$2290). Taking the year as a whole, the partnership neither invests nor disinvests, domestically; had it done either, the entry would have been made one half under I and one half under O. But the partnership does disinvest internationally. By importing \$600 worth of goods, which are included in computing domestic investment or disinvestment, the store G causes the economy as a whole to decrease its net claims on foreigners by \$600. This act of disinvestment is attributed half-and-half to I and O.

This treatment of non-corporate investment cannot, however, be followed in practice; investment is instead subdivided according to type, as shown in Chapter 6, §§ 31-53.

#### IX. GENERAL RECAPITULATION OF HYPOTHETICAL ECONOMY

**45.** Table 1 recapitulates the items of the entire hypothetical economy.

*Factor-payment approach.*<sup>8</sup> Of the \$25,800 national income created during the year, \$16,660 was paid to labor, \$2170 was paid to land-



lords and creditors, and \$6970 went to business owners as net profits (see the totals of the first four rows in the last column). Not all of the \$25,800 was paid in money. The farmer received \$300 in the form of produce raised and consumed on his own farm; this is included in the "profits" row in column F. And the home-owners (the clerk C, the farmer F, the investor I, the owner O, and the teacher T) were credited with a total of \$210 imputed net rent on their houses; this amount is included in the items in the row "interest, net rent."

*Final-product approach.* Viewed as product, the national income was constituted as shown in Section IV of Table 1:

|  |                 |
|--|-----------------|
| Goods and services sold to consumers, including "sale"   |                 |
| of imputed goods and services (row 19)   | \$23,940        |
| Goods and services exported (by the manufacturing concern M, included in row 17)                           | 800             |
| Increase in inventories by firms showing an increase (M, included in row 14)                               | 100             |
| All other assets (see § 3) created by business firms during the year (by the school S, included in row 14) | 13,000          |
| Total  | <u>\$37,840</u> |

minus the product, produced in an earlier year or in another nation, used up in turning out the product listed above:

|   |                 |
|---|-----------------|
| Goods and services imported, including \$100 service of loan (included in row 17)                                       | \$700           |
| Decrease in inventories by firms showing a decrease (by automobile dealer A and materials dealer X, included in row 14) | 6,800           |
| All other using-up of assets during the year, through depreciation and obsolescence (row 15)                            | 4,540           |
| Total   | <u>\$12,040</u> |

|  |          |
|--|----------|
| Net national product (sum of rows 18 and 19) | \$25,800 |
|--|----------|

The gross national product is computed as above except that no account is taken of the non-inventoried assets used up during the year. Hence, gross national product is \$25,800 + \$4540, or \$30,340. It is usually stated in the following segments (the business-tax element is introduced in chapter 4, §§ 8-10):

|                                      |                 |
|--------------------------------------|-----------------|
| Goods and services sold to consumers | \$23,940        |
| Durable assets produced              | 13,000          |
| Net increase in inventories          | - 6,700         |
| Net export balance                   | 100             |
| Gross national product               | <u>\$30,340</u> |

*Saving and investment.* The incomes of individuals totaled only \$25,370 because (a) corporations paid out \$990 less in dividends than they earned in net profit (they "saved" \$990), as shown in row 11, and (b) the pension fund paid out to individuals \$560 more than it received, as shown in row 7.

Individuals spent \$23,940 on consumption, including \$300 imputed consumption outlay on food by the farmer and \$1650 imputed gross rental on owner-occupied dwellings.

Individuals, therefore, saved \$1430 out of their individual incomes. This, added to the corporate saving of \$990 and the pension-fund saving of - \$560, gives a total saving of \$1860 for the economy.

Gross domestic investment is \$6300. This item is a combination of gross and net sub-items. It is made up of gross capital formation through construction, by the school S, of \$13,000, and a series of net changes in inventory year-beginning and year-end positions: the automobile dealer A, - \$800; the manufacturing concern M, + \$100; the building-materials dealer X, - \$6000.

Depreciation and obsolescence being \$4540, the net domestic investment is \$1760. The net change in claims held by this economy against other economies is \$100. Total net investment is therefore \$1860. This is the same as total net saving. The equality of saving and investment for the economy as a whole is a necessary consequence of the definitions of saving and investment. It holds true, even though no one of the persons in the economy shows saving equal to his investment; in the present instance saving equals investment only for the farmer F, by coincidence, and for the bank B and each of the four building workers BW, who show zero on both items. For any one transaction, as contrasted with any one individual, saving always equals investment. The discussion of the manufacturing firm M in §§ 2-16 indicated why this must be so, but a full understanding of the matter cannot be gained from the illustrations in this chapter. Chapter 8 attempts to give such an understanding.

In Table 1, the first four lines, grouped under Section I, present the national income under the factor-payment approach. Section IV presents it under the final-product approach (the sum of items 16, 17, and 19). Sections II and III deal with individual income and with consumption and saving. They follow Section I because they are derived from the data given under the factor-payment approach with the one exception\* of consumption, which is one of the final-product components.

## X. THE BUSINESS-FIRM ITEMS IN TERMS OF ACCOUNTING

46. In real life, the single transactions or acts that are the ultimate building blocks of the national income structure (§1) are far more varied and numerous than the simplified illustration above would indicate. The accounts of the firm M, for example, have been simplified in the following ways, in cost-accounting terminology. The credit in the raw materials account involves a transfer to finished goods instead of goods in process or factory-service (overhead) cost, thus skipping one or more stages. When direct labor is applied (worker W), the credit to cash is reflected at once in a debit to finished goods, thus skipping the charges and credits to vouchers payable, labor, and goods in process, or factory-service cost.

If the firm uses only general accounting methods, not cost accounting, the analysis in §§ 2-16 is too elaborate to be a correct picture of the actual building blocks available in the business firm's records. However, for any one of the transactions, the firm's records under general accounting would show the results indicated, if it is supposed that the concern started its accounting period just before and closed it just after the transaction occurred.

47. There is a close correspondence between the concept "investment" in national income analysis and certain types of entry under cost-accounting procedure. Investment by a particular firm, in the national income sense, is evidenced by a credit to cash or vouchers payable that is accompanied by a debit to real-asset accounts: raw materials, goods in process, finished goods, or plant, machinery, and equipment. The charge may be direct, or indirect through a factory-service (overhead) cost account. Investment is not evidenced by those credits to cash or vouchers payable that are accompanied by charges to accounts like vouchers payable, labor, selling and distribution cost, or financial cost, or to asset accounts that represent financial claims or claims to future performance, for example, loans receivable or prepaid insurance. "Disinvestment" is shown by a credit to raw materials, goods in process, finished goods, or plant, machinery, and equipment (as in depreciation) that does not give rise to a charge to any of these same accounts either directly or through a factory-service cost account.

TABLE 1

**National Income and Component Elements for Complete  
Hypothetical Economy (no Government Operations)**

|  | A   | B   | BB  | 4BW's | C     | C'   | E     | F     |
|--|-----|-----|-----|-------|-------|------|-------|-------|
| <b>I. National Income as<br/>Factor Payments</b>                     |     |     |     |       |       |      |       |       |
| 1. Salaries, wages, etc.   | 0   | 0   | 0   | 6,000 | 2,020 | 0    | 4,140 | 0     |
| 2. Interest, net rent  | 0   | 0   | 580 | 0     | 60    | 0    | 280   | 50    |
| 3. Profits   | 200 | 100 | 0   | 0     | 0     | 0    | 0     | 1,100 |
| 4. <u>National income</u><br>(1 + 2 + 3)                             | 200 | 100 | 580 | 6,000 | 2,080 | 0    | 4,420 | 1,150 |
| <b>II. Deriving Individual In-<br/>come from National<br/>Income</b> |     |     |     |       |       |      |       |       |
| 5. Dividends paid by   | 0   | 100 |     | ..    | ..    | ..   | ..    | ..    |
| 6. Dividends received<br>by (individuals)                            | ..  | ..  | 0   | 0     | 0     | 0    | 0     | 0     |
| 7. Payments to (—) or<br>from (+) pension<br>fund                    | 0   | 0   | 0   | 0     | —40   | 600  | 0     | 0     |
| 8. <u>Individual income</u><br>(1 + 2 + 3 [F, I,<br>O] + 6 + 7)      | ..  | ..  | 580 | 6,000 | 2,040 | 600  | 4,420 | 1,150 |
| <b>III. Consumption and Saving</b>                                   |     |     |     |       |       |      |       |       |
| 9. <u>Individual con-<br/>sumption</u> (see 19)                      |     |     | 140 | 6,000 | 2,200 | 900  | 3,600 | 1,250 |
| 10. Individual<br>saving (8 — 9)                                     | ..  | ..  | 440 | 0     | —160  | —300 | 820   | —100  |
| 11. Corporate saving<br>(3 [except F, I, O]<br>—5)                   | 200 | 0   | ..  | ..    | ..    | ..   | ..    | ..    |
| 12. Pension fund saving  | ..  | ..  | ..  | ..    | ..    | ..   | ..    | ..    |
| 13. <u>Total saving</u><br>(10 + 11 + 12)                            | 200 | 0   | 440 | 0     | —160  | —300 | 820   | —100  |

## REFERENCE KEY TO TABLE 1

See paragraphs

|    |  |                |
|----|--|----------------|
| A  | Automobile dealer, corporation                   | 23, 28, 38     |
| B  | Commercial bank, corporation                     | 37, 38, 43     |
| BB | Mutual savings bank, non-profit corpora-<br>tion | 21, 34–38      |
| BW | Building worker                                  | 21, 25, 30, 43 |
| C  | Clerk in store G                                 | 35, 36, 40, 43 |

TABLE 1 (continued)

National Income and Component Elements for Complete  
Hypothetical Economy (no Government Operations)

|     | G       | I     | L   | M    | N     | O     | PF               | S  | T     | W     | X     | Total  |
|-----|---------|-------|-----|------|-------|-------|------------------|----|-------|-------|-------|--------|
| 1.  | 0       | 0     | 0   | 0    | 1,000 | 0     | 0                | 0  | 1,500 | 2,000 | 0     | 16,660 |
| 2.  | 0       | 0     | 0   | 0    | 0     | 1,300 | 0                | 0  | -100  | 0     | 0     | 2,170  |
| 3.  | [4,580] | 2,290 | 150 | -200 | 0     | 2,290 | 0                | 40 | 0     | 0     | 1,000 | 6,970  |
| 4.  | [4,580] | 2,290 | 150 | -200 | 1,000 | 3,590 | 0                | 40 | 1,400 | 2,000 | 1,000 | 25,800 |
| 5.  | ..      |       | 200 | 0    | ..    |       | ..               | 0  | ..    |       | 0     | 300    |
| 6.  | 0       | 300   | ..  | ..   | 0     | 0     | 0                | .. | 0     | 0     | ..    | 300    |
| 7.  | 0       | 0     | 0   | 0    | 0     | 0     | ..               | 0  | 0     | 0     | 0     | 560    |
| 8.  | 0       | 2,590 | ..  | ..   | 1,000 | 3,590 | [40<br>receipts] | .. | 1,400 | 2,000 | ..    | 25,370 |
| 9.  | 0       | 1,900 |     | ..   | 1,100 | 3,500 | [600<br>outlay]  | .. | 1,400 | 1,950 |       | 23,940 |
| 10. | 0       | 690   | .   | ..   | -100  | 90    | .                | .. | 0     | 50    | ..    | 1,430  |
| 11. | ..      | ..    | -50 | -200 | ..    | ..    | ..               | 40 | ..    | ..    | 1,000 | 990    |
| 12. | ..      | .     | ..  | ..   | ..    | ..    | -560             | .  | .     | .     | ..    | -560   |
| 13. | 0       | 690   | -50 | -200 | -100  | 90    | -560             | 40 | 0     | 50    | 1,000 | 1,860  |

REFERENCE KEY TO TABLE 1 — *Continued*

|                             |  |
|-----------------------------|--|
| C' Retired clerk of store G | 25, 41, 43   |
| E Executive in concern M    | 7, 13, 21, 25, 31, 34, 36, 43                            |
| F Farmer                    | 5, 16-20, 25, 43   |
| G General retail store      | 15, 16, 20, 24, 26, 27, 29-35,<br>37, 38, 40, 41, 43, 44 |
| I Individual investor       | 21, 24, 26, 29, 36-38, 43, 44                            |

TABLE 1 (continued)

## National Income and Component Elements for Complete Hypothetical Economy (no Government Operations)

|  | A    | B  | BB  | 4 BW's | C     | C'  | E     | F     |
|--|------|----|-----|--------|-------|-----|-------|-------|
| IV. National Income as Product                     |      |    |     |        |       |     |       |       |
| 14. Gross domestic investment                      | -800 | 0  | 0   | 0      | 0     | 0   | 0     | 0     |
| 15. Depreciation and obsolescence                  | 0    | 0  | 0   | 0      | 240   | 0   | 0     | 100   |
| 16. Net domestic investment (14-15)                | -800 | 0  | 0   | 0      | -240  | 0   | 0     | -100  |
| 17. Change in foreign balance                      | 0    | 0  | 0   | 0      | 0     | 0   | 0     | 0     |
| 18. Net investment (16 + 17)                       | -800 | 0  | 0   | 0      | -240  | 0   | 0     | -100  |
| 19. Individual consumption:                        |      |    |     |        |       |     |       |       |
| i. Work clothing                                   | ..   | .. | 140 | 6,000  | 2,200 | 900 | 3,600 | 1,250 |
| ii. Food, other clothing, household supplies, etc. | ..   | .. | 140 | 4,800  | 1,600 | 700 | 2,000 | 1,100 |
| iii. Tuition                                       | ..   | .. | 0   | 0      | 0     | 0   | 800   | 0     |
| iv. Money rent                                     | ..   | .. | 0   | 1,200  | 0     | 200 | 800   | 0     |
| v. Imputed rent:                                   | ..   | .. | 0   | 0      | 600   | 0   | 0     | 150   |
| a. Imputed net rent (on equity)                    | ..   | .. | ..  | ..     | 60    | ..  | ..    | 50    |
| b. Interest paid                                   | ..   | .. | ..  | ..     | 300   | ..  | ..    | 0     |
| c. Depreciation                                    | ..   | .. | ..  | ..     | 240   | ..  | ..    | 100   |
| 20. National Income (18 + 19)                      | -800 | 0  | 140 | 6,000  | 1,960 | 900 | 3,600 | 1,150 |

## REFERENCE KEY TO TABLE 1 — Continued

|                                      |   |
|--------------------------------------|---|
| L Real-estate corporation            | 24, 33, 38, 43                                |
| M Manufacturing concern, corporation | 2-16, 17, 20, 33, 34, 38, 43                  |
| N Night watchman employed by M       | 6, 25, 31, 34, 43                             |
| O Individual owner of real estate    | 17, 20, 21, 25-29, 30, 31, 34, 38, 41, 43, 44 |
| PF Pension fund set up by store G    | 40-42   |

TABLE 1 (concluded)

National Income and Component Elements for Complete  
Hypothetical Economy (no Government Operations)

|      | G      | I     | L    | M      | N     | O                     | PF | S      | T     | W     | X      | Total  |
|------|--------|-------|------|--------|-------|-----------------------|----|--------|-------|-------|--------|--------|
| 14.  | 0      | 0     | 0    | 100    | 0     | 0                     | 0  | 13,000 | 0     | 0     | -6,000 | 6,300  |
| 15.  | 0      | 200   | 300  | 1,300  | 0     | 1,900                 | 0  | 200    | 300   | 0     | 0      | 4,540  |
| 16.  | 0      | -200  | -300 | -1,200 | 0     | -1,900                | 0  | 12,800 | -300  | 0     | -6,000 | 1,760  |
| 17.  | [-600] | -300  | 0    | 700    | 0     | -300                  | 0  | 0      | 0     | 0     | 0      | 100    |
| 18.  | [-600] | -500  | -300 | -500   | 0     | -2,200                | 0  | 12,800 | -300  | 0     | -6,000 | 1,860  |
| 19.  | 0      | 1,900 | .    | .      | 1,100 | 3,500                 | .. | ..     | 1,400 | 1,950 | ..     | 23,940 |
| i.   | 0      | 0     | ..   | ..     | 0     | 0                     | .. | ..     | 0     | 30    | .      | 30     |
| ii.  | 0      | 1,200 | ..   | ..     | 800   | 1,000<br>and<br>1,200 | .  | ..     | 1,200 | 1,670 | .      | 17,410 |
| iii. | 0      | 500   | .    | .      | 0     | 800                   | .  | .      | 0     | 0     | .      | 2,100  |
| iv.  | 0      | 0     | ..   | ..     | 300   | 0                     | .. | ..     | 0     | 250   | ..     | 2,750  |
| v.   | 0      | 200   | ..   | ..     | 0     | 500                   | .. | ..     | 200   | 0     | ..     | 1,650  |
| a.   | ..     | 0     | .    | ..     | .     | 200                   | .  | .      | -100  | .     | ..     | 210    |
| b.   | ..     | 0     | .    | ..     | ..    | 0                     | .. | ..     | 0     | ..    | ..     | 300    |
| c.   | .      | 200   | ..   | .      | ..    | 300                   | .. | .      | 300   | .     | ..     | 1,140  |
| 20.  | 0      | 1,400 | -300 | -500   | 1,100 | 1,300                 | 0  | 12,800 | 1,100 | 1,950 | -6,000 | 25,800 |

REFERENCE KEY TO TABLE 1 — *Concluded*

|   |                            |
|---|----------------------------|
| S Private school                                | 21, 22, 29, 32, 34, 36, 38 |
| T Teacher in S                                  | 21, 32, 43                 |
| W Worker in concern M                           | 2, 4, 24, 33, 43           |
| X Wholesaler of building materials, corporation | 21, 22, 38                 |
| Non-residents                                   | 14-16, 43, 44              |

# 3

## *An Illustrative Economy:*

### **INTER-INDUSTRY TABULATIONS AND MONEY FLOWS**

1. The data given for the illustrative economy in Chapter 2 may of course be summarized in many ways other than those exemplified by Table 1. Among the summaries of most interest to those specializing in national income analysis are inter-industry purchases and sales (Tables 2 and 3), national income distributed by industry of origin (Table 4), and money-flow tabulations (Table 5). Other types of summaries, not very usefully illustrated by so small an economy, are discussed in later chapters.

#### **I. PURCHASE-AND-SALE TABLE**

2. The transactions of each member of the economy with each of the other members can be shown in a purchase-and-sale table. Table 2 is a purchase-and-sale table for the entire hypothetical economy. Each transaction is entered twice, once in the buyer's row and once in the seller's row. For example, the executive E buys \$2000 worth of food, clothing, and supplies from the general store G. In the E row, the item is entered in column G. The entry appears in the upper half of the E row, an indication that the occupant of the row (the executive E) is a buyer. In the G row the item is entered in column E. Here the entry is in the lower half of the row, to indicate that the occupant of the row (the general store G) is a seller.

Two entries for the item would not be needed if each row represented only buyers and each column only sellers. Then the \$2000 item could appear only once, in row E, column G (and not in row G,



column E). This procedure is followed in Table 3. But the double-row system makes more convenient a comparison of the two kinds of dealings of any two entities with each other. The table shows readily that the clerk C sold \$2020 of his services to the store G while buying \$1600 of goods from the store.

In the "Total" columns at the right, each cell shows the total purchases (upper half of cell) and the total sales (lower half). The first of the "Total" columns includes in the total all purchases, whether for business purposes or for personal consumption. The second "Total" column includes in purchases only business expenses — including, however, depreciation on owner-occupied houses. In this column, therefore, the difference between purchases and sales in any row gives the net income of the person in that row. (The term "person" is used in its legal sense, including individuals and corporations.) This subtraction is performed and the result is entered in the last column, "Net Factor Payments." The figures in the last column are the same as those in row 4 of Table 1.

3. If a business concern makes sales by drawing down its inventory a certain amount, it must be considered as "purchasing" that amount of inventory (from itself). Otherwise its net factor reward would be overstated. For example, the automobile dealer corporation A is considered as buying \$800 of inventory from itself (row A, column A) in order to make the \$1000 sale to O. The fact that this "purchase" is not a money transaction, but merely an intra-firm bookkeeping entry, is indicated by underlining.

If an individual owns his own home which depreciates during the year, he is considered to be "purchasing" that amount of house value, just as the automobile dealer "purchases" the amount of inventory outflow. The sales side of this transaction is entered in the form of imputed gross rental. Then, if the imputed gross rental exceeds the depreciation (plus any other costs), the ownership of the house has brought the owner a net imputed rental. For example, C is recorded as purchasing from himself \$240 worth of depreciation of house and selling to himself \$600 worth of house accommodation (row C, column C). He purchases the use of money from BB for \$300 interest, so his net imputed rental is \$60. This figure, added to his salary of \$2020, gives his total net income of \$2080 (last column). The imputed sale (gross rental) and the depreciation, being non-money items, are underlined.

**TABLE 2**  
**Purchase and Sale Table for Hypothetical Economy**

| A | B | BB | 4 BW's | C | C' | E   | F | G | I | L | M | N | O     | PF | S | T | W | X | Non-residents | Total | Total Business Items Only | Net Factor Payments |
|---|---|----|--------|---|----|-----|---|---|---|---|---|---|-------|----|---|---|---|---|---------------|-------|---------------------------|---------------------|
|   |   |    |        |   |    |     |   |   |   |   |   |   |       |    |   |   |   |   |               | 800   | 800                       | 200                 |
|   |   |    |        |   |    |     |   |   |   |   |   |   | 1,000 |    |   |   |   |   |               | 1,000 | 1,000                     | 100                 |
|   |   |    |        |   |    |     |   |   |   |   |   |   |       |    |   |   |   |   |               | 0     | 0                         | 100                 |
|   |   |    |        |   |    | 140 |   |   |   |   |   |   |       |    |   |   |   |   |               | 140   | 0                         | 580                 |
|   |   |    |        |   |    |     |   |   |   |   |   |   |       |    |   |   |   |   |               | 580   | 580                       | 580                 |

[illegible]

TABLE 2 (continued)  
Purchase and Sale Table for Hypothetical Economy

| A | B            | BB | 4 BW's             | C     | C'  | E     | F                                    | G     | I                       | L   | M     | N   | O                       | PF                | S | T     | W     | X | Non-residents | Total  | Total Business Items Only | Net Factor Payments |
|---|--------------|----|--------------------|-------|-----|-------|--------------------------------------|-------|-------------------------|-----|-------|-----|-------------------------|-------------------|---|-------|-------|---|---------------|--------|---------------------------|---------------------|
|   |              |    |                    |       |     |       |                                      | 1,300 |                         |     |       |     | 200                     |                   |   |       |       |   |               | 1,600  | 800                       | 1,150               |
|   |              |    |                    |       |     |       | 100 depreciation                     |       |                         |     |       |     |                         |                   |   |       |       |   |               |        |                           |                     |
|   |              |    |                    |       |     |       | 300 home-grown food; 150 imp. rental |       |                         |     | 1,500 |     |                         |                   |   |       |       |   |               | 1,950  | 1,950                     |                     |
|   | 100          |    |                    | 2,020 |     |       |                                      |       | [300 profit with-drawn] | 200 | 9,000 |     | [300 profit with-drawn] | [20 contribution] |   | *     |       |   | 600           | 11,920 |                           |                     |
|   |              |    |                    |       |     |       |                                      |       | 1,200                   |     |       | 800 | 1,200                   |                   |   | 1,200 | 1,700 |   |               | 16,500 |                           | a                   |
|   | [2,500 loan] |    | 1,200 each = 4,800 | 1,600 | 700 | 2,000 | 1,300                                |       |                         |     |       |     |                         |                   |   |       |       |   |               |        |                           |                     |

he profit of \$4580 is attributed one half to partner I and one half to partner O. is credited with one half the partnership profits. He is not credited with the corporate profits of A, B, L, M, S, and X, although he is the (sole) owner of each corporation and receives dividends from two of them. The profits are credited to the respective corporations, as separate legal entities. is credited with one half the partnership profits. This (\$2290) added to his net income from renting (\$1300) gives his total net factor payment, \$3590.

[illegible]

TABLE 2 (concluded)

| A | B | BB                    | 4BW's                    | C              | C'                     | E  | F | G              | I   | L   | M     | N | O   | PF | S                        | T                          | W     | X                 | N-R | Total  | BI Tot. | F. P. |                  |
|---|---|-----------------------|--------------------------|----------------|------------------------|----|---|----------------|-----|-----|-------|---|-----|----|--------------------------|----------------------------|-------|-------------------|-----|--------|---------|-------|------------------|
|   |   |                       |                          |                | [600<br>pen-<br>sion]  |    |   |                |     |     |       |   |     |    |                          |                            |       |                   |     | 0      | 0       |       |                  |
|   |   |                       |                          | [20<br>contr.] |                        |    |   | [20<br>contr.] |     |     |       |   |     |    |                          |                            |       |                   |     |        | 0       | 0     | 0                |
|   |   | 280                   | 1,500<br>each =<br>6,000 |                |                        | 80 |   |                |     |     |       |   |     |    | 200<br>depre-<br>ciation | 1,500                      | 7,000 |                   |     | 15,060 | 15,060  |       |                  |
|   |   | [10,-<br>000<br>loan] |                          |                | 800<br>[2,000<br>loan] |    |   |                | 500 |     |       |   | 800 |    | 13,000<br>build-<br>ing  |                            |       |                   |     | 15,100 | 15,100  |       | 40               |
|   |   |                       |                          |                |                        |    |   | 1,200          |     |     |       |   |     |    |                          | 300 de-<br>precia-<br>tion |       |                   |     | 1,500  | 300     |       |                  |
|   |   |                       |                          |                |                        |    |   |                |     |     |       |   |     |    | 1,500                    | 200<br>imp.<br>rental      |       |                   |     | 1,700  | 1,700   |       | 1,400            |
|   |   |                       |                          |                |                        |    |   | 1,700          |     | 250 |       |   |     |    |                          |                            |       |                   |     | 1,950  | 0       |       |                  |
|   |   |                       |                          |                |                        |    |   |                |     |     | 2,000 |   |     |    |                          |                            |       |                   |     | 2,000  | 2,000   |       | 2,000            |
|   |   |                       |                          |                |                        |    |   |                |     |     |       |   |     |    |                          |                            |       | 6,000<br>fr. inv. |     | 6,000  | 6,000   |       |                  |
|   |   |                       |                          |                |                        |    |   |                |     |     |       |   |     |    | 7,000                    |                            |       |                   |     | 7,000  | 7,000   |       | 1,000            |
|   |   |                       |                          |                |                        |    |   |                |     |     |       |   |     |    |                          |                            |       |                   |     |        |         |       |                  |
|   |   |                       |                          |                |                        |    |   |                |     |     | 800   |   |     |    |                          |                            |       |                   |     | 800    | 800     |       | 100 <sup>d</sup> |
|   |   |                       |                          |                |                        |    |   | 600            |     |     | 100   |   |     |    |                          |                            |       |                   |     | 700    | 700     |       |                  |
|   |   |                       |                          |                |                        |    |   |                |     |     |       |   |     |    |                          |                            |       |                   |     |        |         |       | 25,800           |

counted, in computing national income, since it is an extra-national item.

The farmer who consumes \$300 worth of home-grown food does not need to be recorded as "purchasing" anything; he sells himself \$300 worth of food and shows a net income thereby of \$300 (row F, column F).

4. The bracketed items in Table 2 reflect transfers of money against money claims — loans made, amortization paid, interest paid on personal loans for current living expenses, dividends received, securities sold, contributions to and withdrawals from pension funds, amounts withdrawn from an unincorporated business, and interest credited to savings bank depositors. None of these items changes the totals of national income, saving, investment, or consumption. They are entered in the table, however, because they represent money flows, and hence are useful in linking Table 2 with Table 5 ("Transfers of Domestic Money"). They should be read "pays to" instead of "buys from," and "receives from" instead of "sells to." B, for example, pays to I a \$100 dividend; BB receives from C \$200 in amortization payment.

## II. PURCHASES AND SALES, AND NATIONAL INCOME, BY INDUSTRIAL GROUPS

5. The corporations and individuals in Table 2 may be grouped according to the industry with which they are associated, to show the amount of national income produced by each industrial group. Each group may then be recorded as purchasing so much from each of the other groups, and selling so much to each of them. For any one group, the excess of the sales over purchases represents the aggregate factor reward gained by the group. It is the amount of national income produced by the group. If a group decreases its inventory, the decrease must be registered as a purchase by the group from itself, as in Table 2. Otherwise the excess of sales over purchases would represent more than the total factor reward of the group. Similarly, if a group allows its property to depreciate, it must register the depreciation or obsolescence as a purchase from itself. On the other hand, if the group increases its assets, it registers the increase as a sale to itself. And if the members of the industrial group as ultimate consumers use up something that their own group has produced, the consumption must be registered as a sale by the industrial group to consumers.

Table 3, although essentially like Table 2, is condensed, not only

TABLE 3

## Purchases, Sales, and National Income in Hypothetical Economy

| Purchasers      | Sales of Goods and Services by |                        |                  |                                       |  |  |                     |                       |                      |                              | Na-<br>tional<br>Income |                             |
|-----------------|--------------------------------|------------------------|------------------|---------------------------------------|--|--|---------------------|-----------------------|----------------------|------------------------------|-------------------------|-----------------------------|
|                 | Agricul-<br>ture               | Con-<br>struc-<br>tion | Finance          | Manufacturing                         | Real Estate  | Service                                | Trade-Retail        | Trade-<br>Wholesale   | Non-Resi-<br>dents   | Total<br>From<br>Self        |                         | Purchases<br>From<br>Others |
| Agriculture     |                                |                        |                  |                                       | 200  |  | 500                 |                       |                      | 0                            | 700                     | ..                          |
| Manufacturing   | 1,500                          |                        |                  | <u>Buys 1,300</u><br><u>Sells 100</u> | <u>Buys 3,040<sup>a</sup></u>                        | <u>Buys 200</u><br><u>Sells 13,000</u> |                     |                       | 100                  | <u>1,300</u><br><u>3,040</u> | 1,600<br>0              | ..                          |
| Finance         |                                | 6,000                  |                  |                                       |  |  |                     | 7,000                 |                      | 200                          | 13,000                  | ..                          |
| Real Estate     |                                |                        | 100 (G)          | 9,000 (G)                             | 200 (G)  |  | <u>Buys 800 (A)</u> |                       | 600 (G)              | <u>800</u><br><u>6,000</u>   | 9,900                   | ..                          |
| Trade-Wholesale |                                |                        |                  |                                       |  |  |                     | <u>Buys 6,000 (X)</u> |                      | <u>1,950</u>                 | 21,990                  | ..                          |
| Manufacturers   | <u>300</u>                     |                        | 140 <sup>b</sup> | 800                                   | <u>1,650<sup>c</sup></u><br><u>2,750<sup>d</sup></u> | 2,100 <sup>e</sup>                     | 17,000 <sup>f</sup> |                       |                      | 0                            | 800                     | ..                          |
| Residents       |                                |                        |                  |                                       |  |  |                     |                       |                      |                              |                         | ..                          |
| Sales           |                                |                        |                  |                                       |  |  |                     |                       |                      |                              |                         | ..                          |
| Self            | 300                            | 0                      | 0                | 100                                   | 1,450  | 13,000                                 | 17,500              | 0                     | 0                    |                              |                         | ..                          |
| Others          | 1,500                          | 6,000                  | 240              | 9,800                                 | 3,150  | 2,100                                  |                     | 7,000                 | 700                  |                              |                         | ..                          |
| Purchases       |                                |                        |                  |                                       |  |  |                     |                       |                      |                              |                         | ..                          |
| From self       | 0                              | 0                      | 0                | 1,300                                 | 3,040  | 200                                    | 800                 | 6,000                 | 0                    |                              |                         | ..                          |
| From others     | 700                            | 0                      | 0                | 1,600                                 | 0  | 13,000                                 | 9,900               | 0                     | 800                  |                              |                         | ..                          |
| As added        | 1,100                          | 6,000                  | 240              | 7,000                                 | 1,750  | 1,900                                  | 6,800               | 1,000                 | [-100 <sup>g</sup> ] |                              |                         | 25,800                      |
| Less Purchases  |                                |                        |                  |                                       |  |  |                     |                       |                      |                              |                         |                             |

The sum of 100 (F), 240 (C), 200 (I), 300 (L), 1,900 (O), and 300 (T).

BB, acting for C and I (see chapter 2, § 36).

The sum of 600 (C), 200 (I), 500 (O), 200 (T), and 150 (F).

The sum of 800 (E), 300 (N), 1,200 (4BW's), 200 (C'), 250 (W).

<sup>a</sup> The sum of 800 (E), 500 (I), and 800 (O).

<sup>f</sup> The sum of 16,000 (4BW's) + 1,600 (C) + 700 (C') + 2,000 (E) + 800 (F) + 1,200 (I) + 800 (N) + 1,200 (O) + 1,200 (T) + 1,700 (W) and 1,000 (A).

<sup>g</sup> Not counted, in computing national income, since it is an extra-national item.



by using industrial groups, but also by using rows to denote purchasers and columns to denote sellers. The \$1500 in the manufacturing row and agriculture column, for example, means that agriculture sells \$1500 worth of product to the manufacturing industry.

6. The underlined entries represent imputed sales and purchases; no money changes hands. The person or firm "buys" from himself or "sells" to himself. For example, the entries, Buys 1300 and Sells 100, in the cell in the manufacturing row and the manufacturing column means that the firms in the manufacturing industry have depreciated their equipment \$1300 and have added \$100 to their inventory. The two items could be combined into a net figure, Buys 1200, but they are kept separate since national income accounts usually separate changes in stock of depreciable assets from changes in inventory. The total of the underlined entries is shown in the column "Total Purchases from Self," "Self" referring to persons, not industry groups.

An imputed purchase by a consumer is entered in the consumer row and in the column of the industry making the imputed sale. A home-owner is considered to be in the real estate business. As a real estate entrepreneur he is selling to himself as consumer the annual services of the house, and making an imputed purchase, depreciation. The clerk C of the general store is in the real estate business to the extent of \$600 imputed rental. This item is part of the underlined total of \$1650 in the cell lying in the real estate column and consumer row. As a real estate operator, he makes an imputed purchase of \$200 depreciation. This item is part of the underlined total of \$3040 in the real estate column and real estate row.

The farmer makes an imputed sale of \$300 of foodstuffs to himself as consumer, and the item consequently appears in the agriculture column and consumer row.

7. Money transactions between two persons in the same industrial group drop out of the accounting in the process of consolidating all the individual accounts into one industry account. Hence such transactions do not appear in Table 3. For example, the manufacturing concern M pays \$4000 salary to the executive E. The \$4000 stays within the manufacturing group, since E is counted as a member of the group with respect to this payment.

8. Generally speaking, under prevailing methods of national income accounting, a creditor is counted as a member of the industry

in which his money is used, provided the creditor is an individual. The executive E, with respect to the interest paid to him by the school, is a member of the school industry (service industry), as is the teacher who is paid a salary by the school. But if the creditor is a commercial banking corporation, a distinct industry — namely, the supplying of banking services — is assumed to exist, and the interest received by the bank B on the loan to the retail store is not credited to the retail store industry. Instead, it is counted as part of the gross receipts of the banking industry, and correspondingly serves to increase the profits or wages or other factor rewards of that industry. If the creditor is a savings bank, the classification reverts to that of the individual creditor, since the savings bank is treated as an aggregation of individuals (Chapter 2, § 36). In effect, the savings bank is considered a member of the real estate industry in so far as it receives the \$300 interest on its money invested in C's home, and a member of the school industry with respect to the \$280 interest on the loan to the school. Consequently, neither of these items appears in Table 3.

9. The recipient of net rent, whether an individual or a business firm, is commonly treated as a member of the "real estate" industry, which is usually (but not in Table 3) considered a sub-category of the industry "finance." In contrast to the treatment of interest received by an individual creditor, no attention is paid to the nature of the paying industry. The receiving of rent is considered to call for enough management and other business activity to justify the treatment of an individual who lets only one house as a business firm in the real estate business. The coupon-clipping or dividend-receiving rentier is not considered to be a business firm engaged in the finance industry.

The real estate operator O is therefore classified under real estate, not agriculture, although his property is used in the agricultural industry.

10. The fact that the store G carries on both a retail and a wholesale trade illustrates another difficulty in the classification of industry. The usual solution is to assign the concern to that industry in which it makes the major part of its sales.<sup>1</sup>

<sup>1</sup> Tables 2 and 3 are essentially of the same kind as those developed by Wassily W. Leontief in *The Structure of the American Economy 1919-1929*, except that the present tables take into account changes in inventory, additions to other types of assets, and depreciation. "The whole approach [of the Leontief study] is based on registration of the current *stream*

11. Table 4 shows the national income produced by each industry, broken down into the amount produced by each individual and corporation. The wage and other factor payments made by an industry, not entered as separate items in the purchase-and-sale table (Table 3), are shown here distinctly.

12. Tables 1, 2, and 4 are useful only for explaining the principles of national income accounting; they cannot be compiled for any actual economy, aside from a very small community, since they present data for each individual and corporation. Some of the data that belong in Table 3 are available for the United States for a few years.<sup>1</sup>

The presentation of national income accounts by sectors of the economy is becoming common in official tabulations. The sectors are not usually particular industries, as in Table 3, but larger groupings. The forthcoming revised national income series of the United States Department of Commerce will include five tables dividing the economy into the following sectors: business, government, personal, "rest-of-the-world," and a capital account ("balance of gross saving and investment").<sup>2</sup> Every item is entered twice, once as debit in one of the five tables, and again as a credit in another of the tables. The accounting is thus analogous to that of a private business firm, where every transaction is a debit to one ledger account and a credit to another. Wages paid by all private business, for example, is a debit to the "Consolidated Business Income and Product Account," and a credit to the "Personal Income and Expenditures Account." If the wages were paid to construct capital goods for a private business concern, there is a credit to the Business Account under the heading "To Business on Capital Account," and a debit to the "Balance of Gross Saving and Investment" account, under the heading, "Gross Private Domestic Investment." If the employees save their wages,

of goods and services; the appreciation and depreciation of capital *assets* are explicitly not taken into account." (*Ibid.*, p. 27.) It seemed more convenient in the present tables to list the sellers (recipients of money, in Table 5) in the column headings instead of the row headings, without implying which convention would be better in other studies.

<sup>1</sup> Leontief, *op. cit.*

<sup>2</sup> U.S. Department of Commerce, *National Income and Product Statistics for the United States, 1929-46*. See also the British White Papers on national income cited in Chapter 11 below, and J. B. D. Derksen, *A System of National Book-keeping* [for the Netherlands], pp. 8-10, Tables 1-6. A detailed analysis of national income cast in terms of double-entry accounts will be found in Richard Stone's forthcoming memorandum, "Definition and Measurement of the National Income and Related Totals," an appendix to the *Report of the Sub-Committee on National Income Statistics*, League of Nations.

TABLE 4  
National Income Produced in Each Industry in Hypothetical Economy

|            | A   | B   | BB  | 4 BW's | C     | C' | E     | F     | G       | I     | L   | M    | N     | O     | PF | S  | T     | W     | X     | Total  |
|------------|-----|-----|-----|--------|-------|----|-------|-------|---------|-------|-----|------|-------|-------|----|----|-------|-------|-------|--------|
| culture    |     |     |     |        |       |    |       | 1,100 |         |       |     |      |       |       |    |    |       |       |       | 1,100  |
| struction  |     |     |     | 6,000  |       |    |       |       |         |       |     |      |       |       |    |    |       |       |       | 6,000  |
| nce        |     | 100 |     |        |       |    | 140   |       |         |       |     |      |       |       |    |    |       |       |       | 240    |
| ufacturing |     |     |     |        |       |    | 4,200 |       |         |       |     | -200 | 1,000 |       |    |    |       | 2,000 |       | 7,000  |
| I Estate   |     |     | 300 |        | 60    |    |       | 50    |         | 0     | 150 |      |       | 1,300 |    |    | -100  |       |       | 1,760  |
| rice       |     |     | 280 |        |       |    | 80    |       |         |       |     |      |       |       |    | 40 | 1,500 |       |       | 1,900  |
| de         |     |     |     |        |       |    |       |       |         |       |     |      |       |       |    |    |       |       |       |        |
| etail      | 200 |     |     |        | 2,020 | 0  |       |       | [4,580] | 2,290 |     |      |       | 2,290 |    |    |       |       |       | 6,800  |
| Wholesale  |     |     |     |        |       |    |       |       |         |       |     |      |       |       |    |    |       |       | 1,000 | 1,000  |
| Total      | 200 | 100 | 580 | 6,000  | 2,080 | 0  | 4,420 | 1,150 | [4,580] | 2,290 | 150 | -200 | 1,000 | 3,590 | 0  | 40 | 1,400 | 2,000 | 1,000 | 25,800 |

there is a debit entry under "Personal Saving" in the "Personal Income and Expenditures Account," and a credit entry likewise under "Personal Saving" in the "Balance of Gross Saving and Investment" account. Some of these items, particularly those concerned with saving and investment, involve fields of analysis that are deferred to Chapter 8, where the full significance of the double-entry aspects of national income accounting will become more apparent.

### III. MONEY TRANSFERS

13. The transfers of money within the hypothetical economy are shown in Table 5. This table includes, of course, none of the depreciation items, none of the imputed income, and none of the changes in inventory. It does include money transferred on loan and on repayment of loans, dividends, and all other money transfers. The money transfers that do not enter into the computation of national income are underlined. The rows show those who laid out their money; the columns, those who received the money.

The commercial bank B is put at the top row and the left-hand column with a special heading in each case. Since it here represents the economy's entire commercial and central banking system, and since all payments are assumed to be made by check, the bank B does not itself hold money. It "dispenses" it by creating it; that is, by creating deposits. It "receives" money by destroying it; that is, by canceling deposits.

The foreign transactions are assumed to be financed through the domestic commercial bank B. When the manufacturing corporation M sells \$800 of output to the non-resident, it sells its claim on the non-resident to B, who thereupon creates new money in the form of a deposit for M. The bank exercises its claim on the non-resident by requiring him to turn over to it a deposit of his in a foreign bank. This latter transaction has no place in Table 5, since it does not affect the amount or distribution of domestic money. As a reminder, however, it is entered in brackets in the row "Non-Residents." The domestic money transaction recorded in Table 5 is a receipt of \$800 by M from B.

Similarly, when the store G buys \$600 worth of material from abroad, it gets B to turn over to the non-resident vendor a deposit that B holds in a foreign bank, in exchange for allowing B to cancel a deposit that G had with B. The domestic money transaction con-

TABLE 5  
Transfers of Domestic Money in Hypothetical Economy

|                                | Domestic Money<br>Destroyed by B | Recipients of Money |            |        |       |       |              |       |            |       |       |
|--------------------------------|----------------------------------|---------------------|------------|--------|-------|-------|--------------|-------|------------|-------|-------|
|                                |                                  | A                   | BB         | 4 BW's | C     | C'    | E            | F     | G          | I     | L     |
| Domestic Money<br>Created by B |                                  |                     |            |        |       |       |              |       | 2,500      | 100   |       |
| Dispensers of Money:           |                                  |                     |            |        |       |       |              |       |            |       |       |
| A                              |                                  |                     |            |        |       |       |              |       |            |       |       |
| BB                             |                                  |                     |            |        |       |       | 140          |       |            | 4,000 |       |
| 4 BW's                         |                                  |                     |            |        |       |       |              |       | 4,800      |       |       |
| C                              |                                  |                     | 200<br>300 |        |       |       |              |       | 1,600      |       |       |
| C'                             |                                  |                     |            |        |       |       |              |       | 700        |       |       |
| E                              |                                  |                     |            |        |       |       |              |       | 2,000      |       |       |
| F                              |                                  |                     |            |        |       |       |              |       | 800<br>500 |       |       |
| G                              | 100<br>600                       |                     |            |        | 2,000 |       |              |       |            | 300   | 200   |
| I                              |                                  |                     |            |        |       |       |              |       | 1,200      |       |       |
| L                              |                                  |                     |            |        |       |       |              |       |            | 200   |       |
| M                              | 100                              |                     |            |        |       |       | 4,000<br>200 | 1,500 |            |       |       |
| N                              |                                  |                     |            |        |       |       | 8            |       | 800        |       |       |
| O                              |                                  | 1,000               |            |        |       |       |              |       | 1,200      |       |       |
| PF                             |                                  |                     |            |        |       | 600   |              |       |            |       |       |
| S                              |                                  |                     | 280        | 6,000  |       |       | 80           |       |            |       |       |
| T                              |                                  |                     |            |        |       |       |              |       | 1,200      |       |       |
| W                              |                                  |                     |            |        |       |       |              |       | 1,700      |       | 250   |
| X                              |                                  |                     |            |        |       |       |              |       |            |       |       |
| Non-Residents                  | [800]                            |                     |            |        |       |       |              |       |            |       |       |
| Tot. Receipts                  | 800                              | 1,000               | 780        | 6,000  | 2,000 | 600   | 4,428        | 1,500 | 19,000     | 4,600 | 450   |
| Tot. Outlay                    | 3,400                            | 0                   | 14,140     | 6,000  | 2,120 | 900   | 5,700        | 1,500 | 12,520     | 1,700 | 200   |
| Excess of Receipts             | -2,600                           | 1,000               | -13,360    | 0      | -120  | -300  | -1,272       | 0     | 6,480      | 2,900 | 250   |
| Cash on Hand<br>Year-beginning | ..                               | 5,000               | 15,000     | 800    | 200   | 1,000 | 3,000        | 1,000 | 500        | 1,000 | 1,000 |
| Cash on Hand<br>Year-end       | ..                               | 6,000               | 1,640      | 800    | 80    | 700   | 1,728        | 1,000 | 6,980      | 3,900 | 1,250 |

TABLE 5 (continued)  
Transfers of Domestic Money in Hypothetical Economy

| Recipients of Money |            |       |           |                     |       |       |       |                |              |
|---------------------|------------|-------|-----------|---------------------|-------|-------|-------|----------------|--------------|
| M                   | N          | O     | PF        | S                   | T     | W     | X     | Non-Residents  | Total Outlay |
| 800                 |            |       |           |                     |       |       |       | [600]<br>[100] | 3,400        |
|                     |            |       | .         |                     |       |       |       |                | 0            |
|                     |            |       |           | <u>10,000</u>       |       |       |       |                | 14,140       |
|                     |            | 1,200 |           |                     |       |       |       |                | 6,000        |
|                     |            |       | <u>20</u> |                     |       |       |       |                | 2,120        |
|                     |            | 200   |           |                     |       |       |       |                | 900          |
|                     | <u>100</u> | 800   |           | <u>2,000</u><br>800 |       |       |       |                | 5,700        |
|                     |            | 200   |           |                     |       |       |       |                | 1,500        |
| 9,000               |            | 300   | 20        |                     |       |       |       |                | 12,520       |
|                     |            |       |           | 500                 |       |       |       |                | 1,700        |
|                     |            |       |           |                     |       |       |       |                | 200          |
|                     | 1,000      |       |           |                     |       | 2,000 |       |                | 8,800        |
|                     |            | 300   |           |                     |       |       |       |                | 1,108        |
|                     |            |       |           | 800                 |       |       |       |                | 3,000        |
|                     |            |       |           |                     |       |       |       |                | 600          |
|                     |            |       |           |                     | 1,500 |       | 7,000 |                | 14,860       |
|                     |            |       |           |                     |       |       |       |                | 1,200        |
|                     |            |       |           |                     |       |       |       |                | 1,950        |
|                     |            |       |           |                     |       |       |       |                | 0            |
|                     |            |       |           |                     |       |       |       |                | [800]        |
| 9,800               | 1,100      | 3,000 | 40        | 14,100              | 1,500 | 2,000 | 7,000 | [700]          | 79,698       |
| 8,800               | 1,108      | 3,000 | 600       | 14,860              | 1,200 | 1,950 | 0     | [800]          | 79,698       |
| 1,000               | -8         | 0     | -560      | -760                | 300   | 50    | 7,000 | [-100]         | 0            |
| 5,000               | 20         | 1,000 | 1,000     | 2,000               | 500   | 50    | 1,500 |                | 39,570       |
| 6,000               | 12         | 1,000 | 440       | 1,240               | 800   | 100   | 8,500 |                | 42,170       |

sists of a payment by G to B; that is, a destruction of money by B against G's account. A reminder of the transaction in the foreign bank is entered in the first row, in brackets.

The interest items credited by the savings bank are treated as claims against it rather than money payments, and do not appear in Table 5.

Some assumptions are necessary concerning the amount of cash each person had on hand at the start of the year if a complete money-transfer table is to be compiled. In the text of Chapter 2, such assumptions were made only for M and S. For the others, assumptions are now introduced as shown in the next to the last line of Table 5.

No such compilation as that illustrated by Table 5 has yet been published for any country, but a project is now under way in the United States on "the circuit flow of money payments."<sup>1</sup> A statement covering the war period in the Netherlands has been drawn up that includes not only national income items but also some money transfers on capital account. The economy is divided into six sectors, one being "Banks," where the "increase in notes outstanding," "increase of deposits," and so forth, are balanced by "Treasury bills bought," "advances to Germany," and similar items.<sup>2</sup>

<sup>1</sup> The study is directed by Morris A. Copeland, under the auspices of the National Bureau of Economic Research.

<sup>2</sup> Derksen, *op. cit.*, p. 29, Table 10.



# 4

## *An Illustrative Economy:*

### **THE GOVERNMENT SECTOR**

1. In this chapter the hypothetical economy of Chapter 2 will be altered by introducing a government. The night watchman becomes a government policeman, and the school becomes a government institution. The school building is owned by the government, and the teacher is a government employee. The police service and the school service are rendered by the government free of charge. The government finances these services by taxation, except that it borrows most of the money to build the schoolhouse and draws on its cash balance for the rest.

The aim of the present chapter is merely to indicate how the government's receipts and outlay affect the national income items under the prevailing methods of national income accounting. These methods, as Chapter 7 will indicate, are open to some question. The task of formulating a consistent and informative treatment of government items in national income computations is reserved for Chapter 7.

#### **I. GOVERNMENT EXPENDITURES AND CHANGES IN ECONOMIC STATUS OF MEMBERS OF ECONOMY**

2. The government's current expenses are the wages paid to the policeman N (\$1000) and to the teacher T (\$1500), and the interest

on the loans it contracts from the executive E and the savings bank BB (\$360 interest). It is assumed that this total, \$2860, is raised by taxation. Two kinds of tax are assumed: a sales tax of 10 per cent on the general store G, to raise \$1650, and an individual income tax of 8.9 per cent on that part of each individual's income above \$1000, to yield \$1210. (This is not a "model tax system," merely one that is simple enough to handle in this example without being too unrealistic.) The income tax base includes imputed net income.

3. It is further assumed that the store G succeeds in passing on the full amount of its tax to each of its purchasers and that none of the income tax is passed on.

4. As to the free services now rendered by the government, it is assumed that the manufacturing plant M, which now gets its protection free of charge instead of paying a night watchman, does not succeed in retaining the benefit from the saving of \$1000 in expense, but has to pass it on to one of its customers, G, in a lower selling price. The store G, in turn, might ordinarily be supposed to pass the benefit on to its customers in lower prices, but, to avoid complicating the illustration further, it is assumed that the profits of G rise by \$1000.

The educational service rendered by the school, instead of being concentrated on E, O, and I, is spread evenly over all thirteen individuals in the economy (4 BW's, C, C', E, F, I, N, O, T, and W).

5. The persons in the hypothetical economy may be grouped as follows with reference to the changes in the monetary aspects of their economic lives, owing to the appearance of the government:

(a) No change in any items. This is true of the automobile dealer corporation A; the commercial bank B; the savings bank BB; the real estate corporation L; the pension fund PF; and the building-materials dealer (corporation) X.

(b) No change in net income. The manufacturing corporation M shows a decrease of \$1000 in its expenses, but suffers a decline of \$1000 in the money volume of its sales.

(c) No change in net income, but a decrease in income available for spending or saving (1) owing to the sales-tax element in consumer-

purchase prices: the pensioned clerk C', and the policeman N; (2) owing to both the sales tax and the income tax: the building workers BW; the clerk C; the teacher T; and the worker W.

(d) No change in net income, but an increase in income available for spending or saving because the amount taken in tax is more than offset by the fact that no money is paid to a private firm for education: the executive E.

(e) A decrease in net income (owing to the sales-tax element in his business purchases from G) plus a further decrease in income available for personal spending or saving owing to the two taxes: the farmer F.

(f) An increase in net income and two opposing changes in income available for spending and saving (owing to the two taxes and the removal of education from sale), the net result being an increase in income available for spending and saving: the investor I and the real estate owner O.

(g) A removal from the "net income" segment of the economy: S, the school corporation, now a government body.

Each of the individuals above is experiencing a further element of change in the receipt of educational services free of charge.

6. Under prevailing methods of government accounting, which do not distinguish between outlays for capital improvements and current expenses, the government shows: (a) expenditures of \$1000 (police salary), \$13,000 (construction of school building), \$360 (interest), and \$1500 (teacher's salary), or a total of \$15,860; (b) tax revenue of \$2860; (c) deficit, \$13,000. Also under prevailing methods of government accounting, certain items that were in the private-school accounts now disappear. No entry is made for depreciation (\$200) or for profit (\$40). There are, of course, no receipts from tuition.

## II. FACTOR-PAYMENT APPROACH: BEFORE-TAX AND AFTER-TAX RULES

7. In computing national income for this revised hypothetical economy, the factor-payment approach requires a decision whether the factor payments shall be computed before or after deducting taxes paid. Shall the building worker BW, for example, still be credited with a factor payment of \$1500, or is it only \$1500 minus

income tax; that is, \$1456? Should sales tax shifted to him be deducted also? Prevailing methods of national income computation, both in the United States and Great Britain, count his factor payment at \$1500. Personal taxes and any other taxes shifted to him are ignored in reckoning factor payment. As to the store G, which pays a sales tax of \$1650, the rule is different. The sales tax, being paid in the first instance by a business firm, is a "business tax," and the prevailing rule is that business taxes are subtracted in computing the factor payment (profit) of the business concern. As it happens, G's profit remains unchanged at \$5580 (up \$1000 because of the cheaper purchase from the manufacturing concern M, it will be recalled), since G succeeds in passing on the sales tax in full.

For the entire hypothetical economy, the prevailing rules of computation produce a change in total factor payments. G's income is up \$1000 because of the free government service given to M; and since no profit reckoning is now made as concerns the school S, there is a net decline of \$40 in factor payments. For the entire economy, national income as the sum of factor payments increases by \$960, to a total of \$26,760.

### III. PRODUCT APPROACH

8. Measured from the product approach, the national income consists of the product purchased by domestic consumers, the net addition to business firms' assets (other than money), the net product exported, and the government product distributed free of charge. The product purchased by domestic consumers has decreased \$2100 with respect to education, but it has increased by \$1600, in money terms at least, through the influence of the 10 per cent sales tax on the \$16,000 worth of goods sold by G to consumers (the other \$500 of G's sales is to the farmer as a businessman). The government's product is customarily measured at the cost of what it produces, there being no sales value to serve as a measure. In the present case it produces the services of a policeman (\$1000) and education services at a cost of \$1500 (wages of teacher) plus \$360 (interest on loans). The depreciation cost on the schoolhouse is usually ignored in government accounting. The government also produces an item of capital equipment, the school building, with a cost value of \$13,000.

The several parts of the national income measured from the product approach are therefore as follows:

|   |                 |                 |     |
|---|-----------------|-----------------|-----|
| (a) Product purchased by domestic consumers                             |                 |                 |     |
| (i) Individual consumption, Table 1                                     | \$23,940        |                 |     |
| (ii) Less tuition, now free   | 2,100           |                 |     |
|   | <u>\$21,840</u> |                 |     |
| (iii) Plus sales tax  | 1,600           | \$23,440        |     |
| (b) Net private domestic capital formation                              |                 |                 |     |
| (i) Gross domestic investment, Table 1                                  | \$6,300         |                 |     |
| (ii) Less depreciation and obsolescence                                 | 4,540           |                 |     |
| (iii) Net investment  | <u>1,760</u>    |                 |     |
| (iv) Less net investment in school building, now in government accounts | 12,800          | — \$11,040      |     |
| (c) Net change in foreign balance, Table 1                              |                 |                 | 100 |
| (d) Government product:   |                 |                 |     |
| Service to business (police)  | \$1,000         |                 |     |
| Service to consumers (education)  | 1,860           |                 |     |
| Government gross capital formation                                      | <u>13,000</u>   | <u>\$15,860</u> |     |
| Total net product   |                 | \$28,360        |     |

The total, \$28,360, is \$2560 larger than the \$25,800 national income shown in Table 1, before the government appeared.

Of this difference, \$1600 is accounted for by the sales-tax loading. This may be removed by deflating by an appropriate price index.

Another \$1000 is traceable to the inclusion of \$1000 government service to business. To include this is double counting, since the value of this service to the manufacturing concern M is already reflected in the value of the goods sold by M, or at least in the value of the final goods sold by G. Nevertheless, prevailing methods of national income accounting make no direct attempt to remove such services to business in computing the government share of the product, because of the difficulty of ascertaining what part of the total government outlay should be considered as service to business. Sometimes it is assumed that such services equal in amount the taxes levied on business. A subtraction of business taxes made in computing national income from the product approach, just as in the factor-payment approach (§ 7), eliminates the double counting, under this reasoning. In Chapter 7 this problem is reviewed and suggestions are made for changing the prevailing methods of computation.

The third item in the \$2560 discrepancy is the \$40 profit to the private school, which disappears from the records when the government takes over.

9. A comparison of the national income computed from the product approach and the factor-payment approach, with the government in existence in both cases, shows a discrepancy: \$26,760 (§ 7) against \$28,360 (§ 8). The two approaches should give the same answer. The difference, \$1600, is traceable to the sales tax. If "business taxes" are deducted from the total net product, the two approaches give the same result. As just noted, this deduction is in fact made in prevailing methods of computing national income as a total of factor payments and in some computations of product.

10. It was noted above (Chapter 2, § 10) that the "gross national product" is larger than the national income partly because depreciation is not deducted in computing gross national product. Another reason is that "business taxes," too, are not deducted. In the present case the gross national product is the national income (\$26,760) plus the business taxes (\$1600) and the depreciation (\$4340), or \$32,700. The depreciation figure is not \$4540, as in Table 1, since the \$200 depreciation of the school building has dropped out of the accounts. In terms of kind of product, the gross national product is (§ 8):

|   |         |                 |
|---|---------|-----------------|
| (a) Product purchased by domestic consumers                               |         | \$23,440        |
| (b) Gross private domestic capital formation                              |         |                 |
| (i) Table 1   | \$6,300 |                 |
| (ii) Less gross investment in school building, now in government accounts | 13,000  | — 6,700         |
| (c) Net change in foreign balance, Table 1                                |         | 100             |
| (d) Government product (as in § 8)  |         | 15,860          |
| Gross national product  |         | <u>\$32,700</u> |

#### IV. SAVING AND INVESTMENT

11. Saving of the individuals in the hypothetical economy is redefined, upon the entry of government, as income minus not only expenditures for consumption but also taxes. Consequently, individuals decrease their saving by \$2860, the total tax revenue. Of this decrease, \$1600 is caused by the increased price of consumption goods under the shifted sales tax; \$50, by the decrease in the farmer's profits owing to the shifted sales tax; and \$1210 by the individual income tax. But individuals also increase saving by \$1000 owing to

the increase in net profits of the investor I and the individual owner O. And they increase saving by \$2100 as education is supplied free of charge. On balance, individuals increase their saving by \$240.

Corporate saving decreases \$40 as the school corporation, with its retained profits of \$40, vanishes. Pension-fund saving is unaffected. Hence net private saving is \$1860 (Table 1) + \$240 - \$40 = \$2060.

The government is considered to "save" or "dissave" in the sense of showing a surplus or a deficit. The deficit is the excess of expenditures over tax revenues. In the present case the deficit is \$13,000 \$(6).

Net investment by the private corporations or the individuals is decreased by \$12,800 as the school moves into the government's accounts, which show neither capitalized outlays nor depreciation. Consequently, net private investment for the economy as a whole is \$1860 (Table 1) - \$12,800 = - \$10,940.

In contrast to Table 1, private saving (\$2060) is different from private investment (- \$10,940). The difference (- \$13,000) is equal to the government deficit. This equality illustrates a general rule in national income accounting, that net private saving equals the sum of net investment plus government deficit, a rule that is explained and analyzed in Chapter 8.

If the expenditure of the \$13,000 on the school building is considered a capital outlay, so that the government deficit is zero, the total investment in the economy becomes \$2060, equal to the total saving. If depreciation of \$200 on the government building is taken into account, total net investment becomes \$1860 and a government deficit of \$200 appears (total government outlay, \$15,860; less investment, \$12,800; balance, current expenditure, \$3060; tax revenues, \$2860; deficit, \$200).

**12.** The inquiring reader will have discovered, no doubt, that this brief treatment of a government sector in the hypothetical economy raises more questions than it answers. The issues are more complicated, or at least agreement on how to treat the data is less general, than in the private-enterprise sector. An adequate discussion of the issues requires for illustrative purposes a much simpler hypothetical economy, less complicated by irrelevant private-economy details. Such an economy is postulated in Chapter 7, which endeavors to analyze the points in dispute and suggests changes in the prevailing methods of computation.

# 5

## National Income As Factor Payments

### I. INTRODUCTION

1. In national income compilations it has been found convenient to group the payments for production under four headings: salaries and wages, rent, interest, and profits. These are called "factor payments," because they are payments to those who supply the factors of production, the ultimate forces of production. In economic analysis the factors of production are commonly grouped as labor, the services rendered by land, and the services rendered by, or reflected in, man-made capital. The term "factor" is sometimes applied to the sources of these services: the worker, land, and capital.

Salaries and wages are, roughly speaking, a payment for the factor, labor. The sum of the remaining three payments — rent, interest, and profits — is chiefly property income, and as such is payment for the use of land and capital.<sup>1</sup>

For each of the four kinds of factor payments, the present chapter discusses problems of definition and measurement and describes the sources of data in the United States. Annual data for recent years are presented. The term "payments" is used in a broad sense to

<sup>1</sup> However, cf. Alfred Marshall, *Principles of Economics* (8th ed.), pp. 138, 139, 339; A. C. Pigou, *Economics of Welfare* (4th ed.), pp. 656-62; J. M. Keynes' definition of "factor cost" in *The General Theory of Employment, Interest and Money*, pp. 23, 53; Frank H. Knight, *Risk, Uncertainty and Profit*, pp. 105, 116-30; and George J. Stigler, *The Theory of Price*, pp. 113-14.



include all profits, whether actually paid out to owners or retained in the business. It also includes certain imputed payments.

With a few exceptions the discussion is restricted to the private-enterprise sector of the economy. Government's place in national income is treated in Chapter 7. Consequently, the reader will consider as tentative any statement in the present chapter that involves the total of national income, especially computations of the percentage that a certain part of national income bears to the whole.

2. In this and subsequent chapters the data for the United States are taken from the two major compilations available.

One, covering the period 1919–38, is that of Simon Kuznets, of the National Bureau of Economic Research. It is presented in two parts: a two-volume work, *National Income and Its Composition, 1919–1938*, published in 1941; and *National Product since 1869*, published in 1946. Earlier volumes by Kuznets and his associates, upon which much of this comprehensive work is based, have been noted in Chapter 1, § 30.

The other set of detailed data, covering the period from 1929 to date (with totals only, for 1919–28), has been compiled by the National Income Unit of the Department of Commerce. It has been published in various issues of the monthly *Survey of Current Business* since 1940 and in earlier booklets issued by the Department, noted in Chapter 1, § 31.<sup>1</sup>

The Department of Commerce is publishing a thoroughgoing revision of its national income series some time in 1947. The new series will reflect not only improvements in statistical sources, but also changes in concepts, some of which will tend to decrease the differences between the Kuznets and Commerce totals. Imputed net rent of owner-occupied houses, for example, will be included in the new Commerce series. Nevertheless, a comparison of the Kuznets totals with those of the unrevised Commerce series is instructive. A realization of the points of difference aids an understanding of the revised totals.

Some of the revised Commerce series were published in time to be entered in the tables of this chapter and Chapter 6: salaries and wages (§ 7), net rent paid to individuals (§ 21), and profits (§ 51), and, on the product side, consumer purchases (Chapter 6, § 23). Data published later appear in Appendix B below. Unless otherwise indicated, all references to Commerce data in the present volume are to the older, unrevised series.

<sup>1</sup> See also note b to Table 6.

The differences between the two series of annual totals in Table 6 are most marked in the years of violent price fluctuation, 1919-21 and 1930-32, and reflect chiefly the difference in methods of computing changes in inventory held by business firms. Kuznets' figures eliminate that part of the change in inventory that results from changes in the prices of the inventoried goods. His national income total therefore includes only the current money value of the change in the physical volume held (§§ 39-44). In 1930 this adjustment alone makes a difference of \$4.1 billion.<sup>1</sup> Kuznets counts the government's surplus as being equivalent to a profit, hence a factor payment, and he counts a government deficit as a loss. This makes a difference of about \$2 billion in 1929, for example (§ 57). Kuznets' series includes imputed rent on owner-occupied homes, which adds from \$1 billion to \$2 billion a year compared with the Department of Commerce total (§§ 15-19). Kuznets adjusts depreciation to a current-cost basis (§ 30). In estimating net money rent paid to individuals, Kuznets uses a much lower ratio of net rent to gross rent than the Department of Commerce, getting a net rent total almost a billion dollars lower in some years.<sup>2</sup> Kuznets has a wider coverage in the "service" industry. Other differences are minor or do not affect the total.<sup>3</sup> Both series include in national income employers' and employees' contributions to social security funds (§ 5). Both series deduct "business taxes" (Chapter 6, § 19), and exclude capital gains and losses (§§ 33-38).

Table 6 presents the national income estimates in current dollars; that is, before any adjustment to remove the effect of fluctuation in product prices. Table 7 presents the estimates for 1919-44 as adjusted by indexes of product prices. The Kuznets series is taken from his latest publication, *National Product since 1869*. In that volume the national income totals in current dollars are the same as those given in his *National Income and Its Composition, 1919-1938*. The totals in 1929 dollars, however, are changed because of the use of revised price indexes and because a revision of the final-product components (without revision of the total) shifted the weights to be given to each index number.

Table 8 presents the data of Table 7 in per-person terms, thus showing the national income adjusted to dollars of constant purchasing

<sup>1</sup> Kuznets, *National Income and Its Composition, 1919-1938*, II, 448, Table 81.

<sup>2</sup> *Ibid.*, p. 452, Table 83.

<sup>3</sup> For all details, see *ibid.*, pp. 445-53.

TABLE 6  
National Income, United States, 1919-46, in Current Dollars <sup>a</sup>

|      | (in billions of dollars)                                     |                      |
|------|--|----------------------|
|      | Department of<br>Commerce <sup>b</sup><br>(unrevised series) | Kuznets <sup>c</sup> |
| 1919 | \$68.1   | \$64.2               |
| 1920 | 69.2   | 74.2                 |
| 1921 | 51.9   | 59.4                 |
| 1922 | 59.7   | 60.7                 |
| 1923 | 69.5   | 71.6                 |
| 1924 | 69.2   | 72.1                 |
| 1925 | 73.6   | 76.0                 |
| 1926 | 76.6   | 81.6                 |
| 1927 | 76.1   | 80.1                 |
| 1928 | 78.8   | 81.7                 |
| 1929 | 83.3   | 87.2                 |
| 1930 | 68.9   | 77.3                 |
| 1931 | 54.5   | 60.3                 |
| 1932 | 40.0   | 42.9                 |
| 1933 | 42.3   | 42.2                 |
| 1934 | 49.5   | 49.5                 |
| 1935 | 55.7   | 54.4                 |
| 1936 | 64.9   | 62.9                 |
| 1937 | 71.5   | 70.5                 |
| 1938 | 64.2   | 65.5                 |
| 1939 | 70.8   | d                    |
| 1940 | 77.6   | d                    |
| 1941 | 96.9   | d                    |
| 1942 | 122.2  | d                    |
| 1943 | 149.4  | d                    |
| 1944 | 160.7  | -                    |
| 1945 | 161.0  | -                    |
| 1946 | 165.0  |                      |

<sup>a</sup> All figures in current dollars; hence part of the fluctuations is due to changes in prices.

<sup>b</sup> For 1919-40, from Milton Gilbert and Louis Paradiso, "National Income and Other Business Indicators," in Philip M. Hauser and William R. Leonard, *Government Statistics for Business Use*, p. 23, Table 1, except 1933, for which the 43,322 is a misprint, the correct figure being 42,322 (see *Survey of Current Business*, April, 1944, p. 15, Tables 15 and 16). For 1941-44, *Survey of Current Business*, February, 1946, p. 8, Table 7. For 1945-46, *Survey of Current Business*, February, 1947, p. 7, Table 3. The revised Commerce series, made available later in 1947, is reproduced in Appendix B below.

<sup>c</sup> Simon Kuznets, *National Income and Its Composition, 1919-1938*, I, 137, Table 1.

<sup>d</sup> For 1939-43, Kuznets presents two sets of estimates, in his *National Product since 1869*:

|      | Peacetime Concept<br>of National Income | Wartime Concept<br>of National Income |
|------|---|---------------------------------------|
| 1939 | 72.4                                    | 72.9                                  |
| 1940 | 80.7                                    | 81.7                                  |
| 1941 | 99.0                                    | 103.6                                 |
| 1942 | 121.2                                   | 135.9                                 |
| 1943 | 138.4                                   | 169.7                                 |

Neither of these series is readily comparable with either the Kuznets or the Commerce pre-1939 totals, because of conceptual issues discussed in this and succeeding chapters. The "peacetime-concept" totals for 1939-43 are smaller than the Commerce totals for those years, chiefly because they exclude the part of war output that was financed by wartime increases in direct taxes. The "wartime-concept" totals are larger than the Commerce totals, chiefly because indirect taxes are not subtracted. *National Product since 1869*, pp. 21-23, and p. 55, Table I-18, and Kuznets, *National Product in Wartime*, *passim*.

**TABLE 7**  
**National Income, United States, 1919-44, Deflated by Index**  
**of Product Prices**

|      | (in billions of dollars)                                |  |
|------|---|--|
|      | Department of Commerce:<br>In 1939 Dollars <sup>a</sup> | Kuznets:<br>In 1929 Dollars <sup>b</sup> |
| 1919 | \$47.5  | \$58.2                                   |
| 1920 | 43.1  | 59.6                                     |
| 1921 | 39.5  | 56.3                                     |
| 1922 | 48.3  | 60.7                                     |
| 1923 | 55.4  | 70.3                                     |
| 1924 | 55.0  | 71.7                                     |
| 1925 | 57.6  | 74.0                                     |
| 1926 | 59.6  | 79.0                                     |
| 1927 | 60.9  | 79.9                                     |
| 1928 | 63.0  | 80.8                                     |
| 1929 | 67.0  | 86.9                                     |
| 1930 | 57.1  | 79.9                                     |
| 1931 | 50.3  | 68.7                                     |
| 1932 | 41.0  | 55.5                                     |
| 1933 | 45.0  | 56.3                                     |
| 1934 | 49.8  | 63.0                                     |
| 1935 | 55.2  | 67.6                                     |
| 1936 | 64.2  | 77.8                                     |
| 1937 | 68.0  | 84.0                                     |
| 1938 | 63.2  | 80.7                                     |
| 1939 | 70.8  | c  |
| 1940 | 76.7  | c  |
| 1941 | 91.4  | c  |
| 1942 | 106.0   | c  |
| 1943 | 125.3   | c  |
| 1944 | 130.3   | —  |

<sup>a</sup> Gilbert and Paradiso, *op. cit.*, p. 23, Table 1.

<sup>b</sup> Kuznets, *National Product since 1869*, p. 56, Table I-19.

|      | Peacetime<br>Concept | Wartime<br>Concept |
|------|----------------------|--------------------|
| 1939 | 90.1                 | 90.7               |
| 1940 | 98.0                 | 99.2               |
| 1941 | 109.0                | 113.8              |
| 1942 | 105.0                | 117.7              |
| 1943 | 109.2                | 133.3              |

See note d, Table 6.

**TABLE 8**  
**National Income, United States, Per Person, 1919-44,**  
**Deflated by Index of Product Prices**

|      | Department of Commerce:<br>In 1939 Dollars <sup>a</sup> | Kuznets:<br>In 1929 Dollars <sup>b</sup> |
|------|---|--|
| 1919 | 452   | 554                                      |
| 1920 | 404   | 559                                      |
| 1921 | 365   | 520                                      |
| 1922 | 439   | 552                                      |
| 1923 | 496   | 630                                      |
| 1924 | 486   | 633                                      |
| 1925 | 502   | 644                                      |
| 1926 | 512   | 678                                      |
| 1927 | 515   | 676                                      |
| 1928 | 525   | 674                                      |
| 1929 | 552   | 715                                      |
| 1930 | 464   | 649                                      |
| 1931 | 405   | 554                                      |
| 1932 | 328   | 444                                      |
| 1933 | 359   | 448                                      |
| 1934 | 394   | 498                                      |
| 1935 | 434   | 531                                      |
| 1936 | 501   | 606                                      |
| 1937 | 528   | 652                                      |
| 1938 | 487   | 622                                      |
| 1939 | 541   | c  |
| 1940 | 583   | c  |
| 1941 | 686   | c  |
| 1942 | 787   | c  |
| 1943 | 918   | c  |
| 1944 | 944   | d  |

<sup>a</sup> Gilbert and Paradiso, *op. cit.*, p. 23, Table 1.

<sup>b</sup> From Table 7 and (population) *Statistical Abstract of the United States*, estimates of mid-year population of continental United States.

|      | Peacetime<br>Concept | Wartime<br>Concept |
|------|----------------------|--------------------|
| 1939 | 688                  | 693                |
| 1940 | 743                  | 752                |
| 1941 | 819                  | 855                |
| 1942 | 785                  | 880                |
| 1943 | 815                  | 995                |

See note d, Table 6.

<sup>d</sup> Not yet available.

power per resident of the continental United States. In comparing the two series in Table 7 or Table 8, it must be noted that one of the series is in 1939 dollars and the other in 1929 dollars; prices were higher in 1929.

A detailed comparison of methods and sources used in these two compilations, and in a national income series published by the National Industrial Conference Board, has been made by Marvin Hoffenberg.<sup>1</sup>

3. The factor payments, and hence the national income totals, include payments received by residents of the United States, whether citizens or not, and regardless of where the income originates. They do not include payments made to non-residents even though the payments originate in the United States and represent production carried on within its boundaries. There are some minor exceptions to this general rule (§ 62).

The Department of Commerce uses three attributes in testing for residence: permanent residence, place where work is performed, and location of employing establishment. A worker is a resident if any two of these three tests are met.

The data are for calendar years in principle, but some fiscal year data have had to be included, since governmental units commonly report on the basis of a fiscal year (that is, a twelve-month period ending otherwise than on December 31), and some corporations file fiscal-year returns.<sup>2</sup>

## II. COMPENSATION OF EMPLOYEES

4. Compensation of employees is the major type of factor payment. It accounts for not far from two thirds of the national income in the United States.

The amount compiled under compensation of employees falls considerably short of measuring the total of payments for labor. Some salaries are disguised as dividends on capital investment by the officer-owners of a closely held corporation. More important is the omission of the labor element contained in the profits of partnerships and sole proprietorships. These profits, both in income-tax returns

<sup>1</sup> "Estimates of National Output, Distributed Income, Consumer Spending, Saving, and Capital Formation," with assistance from Mabel S. Lewis, under the direction of John H. G. Pierson, *Review of Economic Statistics*, May, 1943, pp. 101-74.

<sup>2</sup> Kuznets, *National Income and Its Composition, 1919-1938*, II, 417-18; Gardner F. Derrickson, "Trend of Corporate Profits, 1929-1945," *Survey of Current Business*, April, 1946, p. 12. See also Chapter 10 below.

and from industrial censuses, are computed without deducting any salaries paid to the proprietor or partners. Consequently, none of the labor element in the profits of unincorporated concerns is listed under "compensation of employees." Instead, it forms an indistinguishable part of the "profits" total (§ 55). This element is considerable, especially among farmers. In some cases — sharecroppers, for instance — practically all the reported "profits" is essentially compensation for labor.<sup>1</sup>

Occasionally there is even difficulty in distinguishing between a sole-proprietor status and an employee status. Workers on own account in the construction industry and office solicitors in insurance are typical examples.

Finally, a large amount of labor is entirely unrepresented in the national income data. This is the work done by housewives and other members of the family in the home: cooking, cleaning, repairing, and so on. If each of two housewives does her own laundry, no national income is registered in the usual statistics. If each housewife does the other's laundry for pay, national income as currently computed is increased by the two items of wages (or profits, or whatever they are called). If a man marries his housekeeper and gives her an allowance in place of wages, national income decreases. In a country where household services have come to be performed largely outside the home, or inside the home for pay, and the housewives use the time thus freed to work in paid occupations, the national income as at present computed will be larger than in a country where most of these services are performed by the family itself. The production of the former country is not actually as much greater as the difference in national income figures would indicate.

For any one country, a comparison of national income totals over several decades may suffer because a change from unpaid domestic work to paid work, domestic or otherwise, may have occurred. However, the only series available on this point fails to show much of a shift. In Sweden, it is estimated that the ratio of national income including unpaid domestic work to national income excluding such work was 1.22 in 1861 and 1.20 in 1930.<sup>2</sup>

For this as well as other reasons, the national income per person

<sup>1</sup> Kuznets, *op. cit.*, II, 405-06.

<sup>2</sup> Erik Lindahl, Einar Dahlgren, and Karin Kock, *National Income of Sweden, 1861-1930*, part I, pp. 234-35. However, note the qualifications, *ibid.*, pp. 213-15, 238-39, and part II, pp. 527-32.

of a highly industrialized, urbanized country is likely to appear greater than that of an agricultural country. Interstate comparisons and rural-urban comparisons are affected by the same circumstance.

Kuznets has estimated the services performed in the home by housewives at some \$23 billion for 1929, at 1929 annual compensation rates of domestic servants (\$900) and farm workers (\$600).<sup>1</sup> Apparently, the chief reason for excluding this item ("imputed wages") from national income estimates is the difficulty of measuring it. Some objection to including it has also been offered on the ground that it does not represent a market transaction.

In principle, the national income might be defined to include every activity around the home which is wanted enough so that, if necessary, the householder would be willing to work more on the outside for money in order to employ outsiders to render the service. This would be so, to some extent, with the householder who paints his furniture or house or the man who shaves himself. In practice the difficulties of accounting compared to the small size of the amounts involved, other than housewives' services, make such computations unprofitable.

True labor income is evidently much larger than the total recorded under "compensation to employees." And it accounts for a larger percentage of the total national income, whether or not imputed income is taken into account.

5. Pensions to employees raise the question of timing in the recording of income. The services for which these payments are being made were rendered in earlier years. In principle, therefore, it is preferable to account for them in the earlier years. If a formal pension fund is set up, the payment by the company into the fund may be counted in that year as a part of the national income, under "supplements to salaries and wages." An equal deduction must be made in computing profits for that year. The payment into the fund may also be included in "income payments" to individuals ("personal income") (Chapter 8, § 19), on the assumption that the pension fund is in effect an aggregation of individuals. When the pension is paid out of the fund, in a later year, it is ignored in the national income accounts. This method will be followed in the forthcoming revised Department of Commerce estimates of supplements to wages and salaries. The older Commerce Department data in

<sup>1</sup> *Op. cit.*, II, 433.



Table 10 (column 5) reflect the simpler method of including in the national income and income payments of the later year the pension payment to the employee and excluding from the national income and income payments of the earlier year the employer's payment into the fund. Prior to the encouragement given to pension funds by the high income-tax rates of recent years, the gap between private pension payments and accruals was not considerable in any one year.

Under the federal old-age pension system and other government old-age programs, on the contrary, important differences developed in the latter part of the nineteen-thirties between amounts going into and amounts coming out of the pension funds. In the Commerce Department computations shown in Table 10, the amounts deducted from the workers' pay and turned in to the old-age fund (that is, the employees' old-age tax) have been counted in "salaries and wages" in the year when earned. The amounts paid into the fund by employers (the employers' payroll tax) have been counted in "supplements to salaries and wages" in the year when paid in. Hence both these tax payments appear in the national income. The old-age pensions and survivors' insurance paid out of the fund are not included in the national income of the year of payment. Conversely, the total known as "income payments to individuals" for any given year is reached (so far as the points under discussion are concerned) by subtracting from national income the tax payments made by employers and employees into the government fund during that year and adding the pensions and insurance paid out.

A similar accounting practice is followed with respect to the payroll taxes paid by employers (and in some states by employees) into funds for unemployment compensation and the outpayments made from the funds when unemployment develops.

Payments into the social security funds by private employers, which started in 1936, were \$1.3 billion in 1939, and \$2.3 billion in 1943. Since total contributions to social insurance funds, plus government contributions to pension funds for government employees, were \$2 billion in 1939 and \$3.8 billion in 1943, the indicated contributions by private employees were somewhat less than \$0.7 billion and \$1.5 billion in the respective years. Meanwhile, payments from social security funds were only \$0.9 billion in 1939 and \$1 billion in 1942 (detailed data for 1943 not given).<sup>1</sup>

<sup>1</sup> *Survey of Current Business*, April, 1944, p. 13, Table 12, and p. 15, Table 15; March, 1943, p. 25, Table A.

6. The figures given in Table 10 for total salaries and wages, and hence also for total compensation, are more nearly accurate for some of the years than for others. In the new series for salaries and wages in private industry (Table 10, column 7) the estimates are more nearly accurate for the years 1940-44 than for the preceding years; and among those preceding years, the data for the odd years are better than those for the even years.<sup>1</sup>

The relative accuracy of the 1940-44 data reflects the information compiled for the years starting with 1940 by the Federal Bureau of Old-Age and Survivors' Insurance, the state unemployment compensation agencies, and the Federal Railroad Retirement Board, in the course of administering the Social Security System. By far the major part of the private-enterprise sector is covered by the Social Security System; the chief uncovered fields are farming, domestic service, and non-profit activities.

For the years preceding 1940, the closer approach to accuracy in the odd years derives largely from the fact that the *Census of Manufactures* was taken biennially in odd years. For even years the total wages paid in manufacturing industries were estimated by interpolation, through the use of Bureau of Labor Statistics indexes (usually annual averages) that covered only part of the field. Salary estimates involved interpolation also. The interpolated figures are presumably less reliable than the others.

Again, the data for some of the odd years are probably more nearly accurate than those for other odd years; some of the censuses other than that for manufactures were taken for odd-numbered years but not biennially.

For any one year, the estimates of salaries and wages paid in the various industries also differ in reliability. The difference does not arise merely from differences in the extent to which interpolation or extrapolation is used. In some industries the figure for wages and salaries paid is obtained directly from data on payrolls. In others, it represents a combination of two sets of data: numbers employed, and rates of pay per employee. The latter method offers an additional opportunity for error, owing to discrepancy in sources. An example is money wages earned in domestic service. The 1930 figure was

<sup>1</sup> The statements in this and the succeeding five paragraphs are based on Edward F. Denison, "Revised Estimates of Wages and Salaries in the National Income, 1929-1943," *Survey of Current Business*, June, 1945.

obtained by multiplying (a) the number employed as reported by the *Census of Population* for that year by (b) the average wage paid in 1939 derived from the *Census of Population* for 1940 and extrapolated back to 1929 by data reported in surveys of employment agencies.

The difficulty of estimating wage and salary payments in kind is another reason why the reliability of the data varies from one industry to another. Payments in kind are a "perceptible portion" of wages and salaries in farming, eating and drinking places, water transportation, hotels and other lodging places, private households, educational services, and religious organizations. They are valued at cost to the employer, whenever possible.

In the government sector, the value of food, clothing, and other subsistence furnished to members of the armed forces is not included in "compensation to employees" for 1942 and the following years. This exclusion produces a substantial understatement both of compensation to employees and total national income.<sup>1</sup> Mustering-out pay, bonuses, and other deferred pay, like payments under the "G.I. Bill of Rights," are excluded because of difficulty of allocation to the proper year.<sup>2</sup> This, too, results in an understatement of compensation of employees and the total of national income, over a period of several years.

Finally, the comprehensiveness of coverage of the censuses and other surveys differs considerably from industry to industry.<sup>3</sup>

7. Table 9 contains data from Kuznets (1919-38) and Table 10 from the Department of Commerce (1929-46). In Table 10 the "new series" data in Column 7 are a revision published in the *Survey of Current Business* of June, 1945. The "old series" data, however, are the ones that go to make up the national income totals published in the February, 1947, and earlier issues of the *Survey*.

The total of compensation to employees in Tables 9 and 10 is split into "salaries and wages," and "supplements to salaries and wages" (Department of Commerce), or "other payments to employees" (Kuznets). The "supplements" or "other" item, never more than \$5 billion a year in 1919-46, consists chiefly of work-relief wages (which, however, never amounted to more than 3 per cent

<sup>1</sup> For the reasons given by the Commerce Department for this exclusion, see Chapter 6, § 28. The item is included in the revised data (see Appendix B below).

<sup>2</sup> Edward F. Denison, "Report on Tripartite Discussions of National Income Measurement," *Studies in Income and Wealth*, X, p. I-10 (mimeograph).

<sup>3</sup> On this point see Kuznets, *op. cit.*, I, chap. 3, "Methods of Measurement."

TABLE 9

## Compensation of Employees, United States, 1919-38, by Major Categories (Kuznets)

(in billions of current dollars)

| Year | (1)<br>Total Compensation<br>of Employees    |   | (3)<br>Salaries and Wages                    |  | (5)<br>Other Payments to<br>Employees |  | (7)<br>Employee Compensation<br>in Private Industry<br>(Salaries and Wages plus<br>Other Payments) |  | (9)<br>Employee Compensation<br>in Governmental Agencies<br>(Salaries and Wages plus<br>Other Payments) |  |
|------|--|---|--|--|---------------------------------------|--|--|--|---|--|
|      | Absolute<br>Amount <sup>a</sup><br>(3) + (5) | Per Cent of<br>National<br>Income <sup>b</sup><br>(4) + (6) | Absolute<br>Amount <sup>a</sup><br>(7) + (9) | Per Cent of<br>National<br>Income <sup>b</sup> | Absolute<br>Amount <sup>a</sup>       | Per Cent of<br>National<br>Income <sup>b</sup> | Absolute<br>Amount <sup>c</sup>  | Per Cent of<br>Total Com-<br>pensation<br>of Employees | Absolute<br>Amount <sup>d</sup>   | Per Cent of<br>Total Com-<br>pensation<br>of Employees |
| 1919 | \$37.1                                       | 58  | \$36.7                                       | 57   | \$0.4                                 | 1  | \$33.1   | 89   | \$4.0   | 11   |
| 1920 | 43.9   | 59  | 43.3   | 58   | 0.6                                   | 1  | 40.0   | 91   | 3.9   | 9  |
| 1921 | 35.5   | 60  | 34.9   | 59   | 0.6                                   | 1  | 31.5   | 89   | 4.0   | 11   |
| 1922 | 37.0   | 61  | 36.4   | 60   | 0.6                                   | 1  | 33.0   | 89   | 4.0   | 11   |
| 1923 | 43.3   | 60  | 42.7   | 60   | 0.6                                   | 1  | 39.2   | 91   | 4.1   | 9  |
| 1924 | 43.3   | 60  | 42.7   | 59   | 0.6                                   | 1  | 39.0   | 90   | 4.3   | 10   |
| 1925 | 45.0   | 59  | 44.4   | 58   | 0.6                                   | 1  | 40.5   | 90   | 4.5   | 10   |
| 1926 | 48.0   | 59  | 47.4   | 58   | 0.6                                   | 1  | 43.3   | 90   | 4.7   | 10   |
| 1927 | 48.4   | 60  | 47.8   | 60   | 0.6                                   | 1  | 43.5   | 90   | 4.9   | 10   |
| 1928 | 49.4   | 60  | 48.7   | 60   | 0.7                                   | 1  | 44.2   | 89   | 5.2   | 11   |
| 1929 | 52.2   | 60  | 51.5   | 59   | 0.7                                   | 1  | 46.8   | 90   | 5.4   | 10   |
| 1930 | 47.8   | 62  | 47.0   | 61   | 0.7                                   | 1  | 42.3   | 88   | 5.5   | 12   |
| 1931 | 40.5   | 67  | 39.6   | 66   | 0.9                                   | 1.5  | 34.7   | 86   | 5.8   | 14   |
| 1932 | 31.7   | 74  | 31.7   | 72   | 1.0                                   | 2  | 26.0   | 82   | 5.7   | 18   |
| 1933 | 30.1   | 71  | 28.2   | 67   | 1.9                                   | 4  | 23.9   | 79   | 6.2   | 21   |
| 1934 | 34.9   | 70  | 32.1   | 65   | 2.8                                   | 6  | 27.7   | 79   | 7.2   | 21   |
| 1935 | 37.9   | 70  | 35.0   | 64   | 2.9                                   | 5  | 30.1   | 79   | 7.8   | 21   |
| 1936 | 42.8   | 68  | 38.9   | 62   | 3.9                                   | 6  | 33.9   | 79   | 8.9   | 21   |
| 1937 | 47.5   | 67  | 43.5   | 62   | 4.0                                   | 6  | 39.0   | 82   | 8.5   | 18   |
| 1938 | 44.4   | 68  | 39.7   | 61   | 4.7                                   | 7  | 35.1   | 79   | 9.3   | 21   |

<sup>a</sup> Kuznets, *op. cit.*, I, 216, Table 22, and pp. 322-23, Table 57.<sup>b</sup> *Ibid.*, I, 217, Table 22.

Column 1 minus column 9.

<sup>d</sup> Kuznets, *op. cit.*, I, 314-15, Table 50. Includes pensions and relief payments (maximum, \$3.5 billion, in 1936; minimum, \$0.4 billion, in 1919). *Ibid.*, II, 811-12, Tables G1, G2, G3.

TABLE 10

## Compensation of Employees, United States, 1929-46, by Major Categories (Commerce)

(in billions of current dollars)

| Year | (1)<br>Total Compensation<br>of Employees    |  | (2)<br>Per Cent<br>of National<br>Income<br>(4) + (6)        |                                   | (3)<br>Salaries and Wages <sup>a</sup> |                                   | (4)<br>Supplements to<br>Salaries and Wages <sup>b</sup> |                                   | (7)<br>Salaries and Wages in<br>Private Industry |  |   | (8)   | (9)  | (10)   |
|------|--|--|--|-----------------------------------|--|-----------------------------------|--|-----------------------------------|--|--|---|---|--|--|
|      | Absolute<br>Amount <sup>c</sup><br>(3) + (5) | Per Cent<br>of National<br>Income<br>(4) + (6) | Absolute<br>Amount <sup>c</sup><br>(7) (old series)<br>+ (9) | Per Cent<br>of National<br>Income | Absolute<br>Amount <sup>c</sup>        | Per Cent<br>of National<br>Income | Absolute<br>Amount <sup>c</sup>                          | Per Cent<br>of National<br>Income | Absolute Amount<br>(old series) <sup>e</sup>     | Absolute Amount<br>(new series) <sup>f</sup> | Per Cent<br>of Total<br>Salaries<br>and Wages<br>(old series) | Per Cent<br>of Total<br>Salaries<br>and Wages<br>and Wages<br>Amount <sup>e</sup> | Per Cent<br>of Total<br>Salaries<br>and Wages<br>Amount <sup>e</sup> | Per Cent<br>of Total<br>Salaries<br>and Wages<br>Amount <sup>e</sup> |
|      |  |  |  |                                   |  |                                   |  |                                   |  |  |   |   |  |  |
| 29   | \$53.1                                       | 64   | \$52.6   | 63                                | \$0.5                                  | 1                                 |  |                                   | \$47.5   | \$45.2                                       | 90  | \$5.0   | 10   |  |
| 30   | 48.2   | 70   | 47.7   | 69                                | 0.5                                    | 1                                 |  |                                   | 42.5   | 40.7   | 89  | 5.1   | 11   |  |
| 31   | 40.6   | 75   | 40.0   | 73                                | 0.6                                    | 1                                 |  |                                   | 34.9   | 33.6   | 87  | 5.1   | 13   |  |
| 32   | 31.7   | 79   | 31.0   | 78                                | 0.6                                    | 1                                 |  |                                   | 26.1   | 25.3   | 84  | 5.0   | 17   |  |
| 33   | 29.8   | 70   | 28.7   | 68                                | 1.1                                    | 3                                 |  |                                   | 24.2   | 23.7   | 84  | 4.5   | 16   |  |
| 34   | 34.5   | 70   | 32.6   | 66                                | 1.9                                    | 4                                 |  |                                   | 28.0   | 27.4   | 86  | 4.6   | 14   |  |
| 35   | 37.5   | 67   | 35.6   | 64                                | 1.9                                    | 3                                 |  |                                   | 30.6   | 30.0   | 86  | 5.0   | 14   |  |
| 36   | 43.0   | 66   | 40.0   | 62                                | 3.1                                    | 5                                 |  |                                   | 34.5   | 33.9   | 86  | 5.5   | 14   |  |
| 37   | 48.3   | 68   | 45.0   | 63                                | 3.3                                    | 5                                 |  |                                   | 39.3   | 38.4   | 87  | 5.7   | 13   |  |
| 38   | 45.1   | 70   | 41.2   | 64                                | 3.9                                    | 6                                 |  |                                   | 35.2   | 34.6   | 85  | 6.0   | 15   |  |
| 39   | 48.1   | 68   | 44.2   | 62                                | 3.8                                    | 5                                 |  |                                   | 38.0   | 37.5   | 86  | 6.2   | 14   |  |
| 40   | 52.3   | 67   | 48.6   | 63                                | 3.7                                    | 5                                 |  |                                   | 41.9   | 41.1   | 86  | 6.8   | 14   |  |
| 41   | 64.5   | 67   | 60.8   | 63                                | 3.7                                    | 4                                 |  |                                   | 52.6   | 51.5   | 87  | 8.2   | 14   |  |
| 42   | 84.1   | 69   | 80.8   | 66                                | 3.3                                    | 3                                 |  |                                   | 66.9   | 65.6   | 83  | 13.6  | 17   |  |
| 43   | 106.3  | 71   | 103.1  | 69                                | 3.2                                    | 2                                 |  |                                   | 80.0   | 78.9   | 78  | 22.0  | 22   |  |
| 44   | 116.0  | 72   | 112.8  | 70                                | 3.2                                    | 2                                 |  |                                   | h  | 83.1 <sup>g</sup>                            | h   | h   | h  |  |
| 45   | 114.5  | 71   | 111.4  | 69                                | 3.1                                    | 2                                 |  |                                   | 81.0   | h  | 74  | 29.2  | 26   |  |
| 46   | 109.8  | 67   | 106.6  | 65                                | 3.3                                    | 2                                 |  |                                   | 87.4   | h  | 83  | 17.9  | 17   |  |

<sup>a</sup> Includes commissions, tips, bonuses, and payments in kind that clearly represent an addition to the income of the recipient.

<sup>b</sup> Work relief wages, Social Security contributions of employers, and employer contributions to pension funds under private plans and under systems for government employees, compensation for industrial injuries, and so on.

<sup>c</sup> Survey of Current Business, April 1944, p. 15, Table 15, for 1929-40; February, 1946, p. 8, Table 7, for 1941-43; February, 1947, p. 8, Table 8, for 1944-46.

<sup>d</sup> The data do not include subsistence to members of the armed forces for 1942 and subsequent years. (See Chapter 6, § 28.)

<sup>e</sup> Survey of Current Business, April, 1944, p. 15, Table 15; and February, 1947, p. 7, Table 2. Note that for 1941-43 and 1945-46 this item is unrevised as compared with the total given in columns 1 and 3.

<sup>f</sup> Survey of Current Business, June, 1945, p. 22, Table 5.

<sup>g</sup> Survey of Current Business, November, 1945, p. 23.

<sup>h</sup> Not available.

of the national income) and payments by employers to old-age or pension funds, whether through the federal old-age employers' tax or through voluntary support of a retirement plan.

"Supplements to salaries and wages" in the Commerce Department series does not include direct-relief payments. Kuznets' "other payments to employees," in the government sector, does include direct-relief payments. This inclusion does not increase his total for national income, however. In computing the total national income, Kuznets deducts the government deficit on current account. The relief payments increase this deficit as much as they increase individuals' income.

Neither the Department of Commerce nor Kuznets includes soldiers' bonus or war service bonus in national income.

The "salaries and wages" item is much the larger component. In the boom year 1929 it was over \$50 billion. It fell steadily in the depression to less than \$30 billion in 1933, then rose almost without interruption to nearly \$50 billion in 1940. The war years saw a great increase, to more than \$110 billion in 1944. These amounts represent salaries and wages paid by federal, state, and local governments as well as salaries and wages in private industry. The governments' payrolls, exclusive of relief and work-relief payments, rose from \$4 billion to \$5 billion in the nineteen-twenties, remained steady at \$5 billion in each of the years 1929-36 inclusive, rose to \$6 billion in each of the next three years, and to \$7 billion in 1940. The war pushed the total up to \$22 billion in 1943. As a percentage of total salaries and wages (using the "old series" data), the governments' payrolls increased somewhat — from 14 per cent in 1939 to 22 per cent in 1943. This increase is perhaps not as great as might have been expected, especially in view of the enormous expansion of the armed forces, although it must be recalled that the cost of subsistence furnished the members of the armed forces is not included in the figures for 1943 (§ 6).

It is remarkable that, even through a great boom and a deep depression during the entire twenty years covered by Kuznets' data, the proportion of the annual national income that was recorded under "compensation of employees" fluctuated in the narrow range between 58 per cent and 74 per cent. The lower figure occurred in 1919; the higher, in the depression year 1932. During 1919-29 this item moved within the range 58 per cent to 61 per cent; during 1934-38 within the range 67 per cent to 70 per cent.<sup>1</sup> Similarly, the Com-

<sup>1</sup> Kuznets, *op. cit.*, I, 216-17.

merce Department data show this element of national income fluctuating between 64 per cent and 79 per cent in the period 1929-46. In Great Britain, for wages only (as distinct from salaries) an even more remarkable stability as a percentage of national income appears for the periods 1880-1913 and 1924-44.<sup>1</sup> The British compute national income inclusive of income and excess profits taxes, in contrast to the Commerce Department (old series) and Kuznets.

8. The Commerce Department publishes in the *Survey of Current Business* monthly data on total salaries and wages as a component of "income payments [to individuals]" rather than of national income. This component of that series differs from the annual figures given in column 3 of Table 10, in that it excludes that part of salaries and wages taken from the employee in social security taxes and includes work-relief wages instead of placing them under "supplements to salaries and wages."

The total figure for "income payments to individuals" also includes direct-relief payments, veterans' pensions and bonus payments, social security benefits, retirement payments to government employees, allowances to dependents of enlisted men, and mustering-out pay, none of which is included in national income. They are "transfer payments," not reflecting production, at least not in the year of payment.<sup>2</sup> The concept "transfer payments" is discussed in more detail in a later chapter (Chapter 7, §§ 57-58).

### III. NET RENT

9. Some rent is paid to corporations; the rest, to partnerships and sole proprietorships, or to individuals whose activity as landlords is so incidental that they are not to be considered business concerns engaged in the business of renting. Owing partly to lack of data, however, rent recipients have been divided into two classes only: corporations and "individuals," the latter including all unincorporated enterprises.

If the rent is paid to a corporation, it appears in the corporation's tax return as gross income, along with any other income items. Expenses are deducted, and the remainder is labeled not "net rent" but "net profit." All corporate profits are included in national income; consequently, it would be double counting to include in addition the net rent paid to corporations. This is true even if the

<sup>1</sup> For an explanation of this stability, in terms of "average degree of monopoly," see T. Barna, *Profits During and After the War* (1945).

<sup>2</sup> Gilbert and Paradiso, *loc. cit.*, pp. 30-31, in Hauser and Leonard, *op. cit.*

corporation's sole source of income is rental. In such a case the net rent appears in the national income statistics as profits (dividends plus corporate saving) of corporations in the real estate industry.

For example, if a real estate corporation leases a site to a retail store, the rental payment made by the retail store is not itself a factor payment; it is, instead, like a payment for goods or supplies. The service rendered by the site is produced in the real estate industry, not in the retail trade industry. The factor payment for this service is recorded as (corporate) profit, not net rent.

Consequently, the item "rent" as a component of national income includes, or at least is designed to include, only net rent received by individuals. For this purpose, however, the term "individuals" embraces partnerships and proprietorships in the real estate industry. The computations for the industry show no "profits" for these unincorporated concerns. All their factor income is either wages or salaries, or "net rent to individuals."

However, in the new Commerce series (§ 20) unincorporated concerns in the real estate industry will be distinguished from individuals and their net rent will be recorded as profits of that industry.

**10.** Even when a rented property is owned by an individual, the amount appearing in the net-rent category will depend on the methods of financing. Two identical dwellings renting for the same amount and with the same expenses for repairs, depreciation, and taxes will show different net rents if one has a larger mortgage against it than the other. The net rental in the broad sense of the net income available to investors is split between interest and net rent. The net rent may even be a negative item (cf. §§ 27, 32).

**11.** If the property is owned by the person who uses it, there is, of course, no rental actually paid.

If the owner is a business firm, the fact of ownership in place of tenancy is reflected in profits that are larger (usually) than they would have been if the concern had paid a rental to someone else who in turn had defrayed the repairs, taxes, and other costs of owning and operating the property.

If the owner is an individual not using the property in business — typically, a home-owner — the net rent that would appear under tenancy disappears from the accounts on which the national income money estimates are based. Consequently, an estimate of "imputed" net rental enjoyed by the individual owner-user must be made if an understatement of the total national income is to be avoided.



12. From what has been said in §§ 9–11 above, it is evident that only limited importance can be attached to the relative amounts of total net rent, total interest, and total profit reported for the economy. If fewer individuals and more corporations become landlords, the total of net rent decreases and the total of profits increases; thus if some firms purchase for their own use, with their own money, properties they have been renting from individuals, this alteration in totals occurs. If tenants become home-owners, net rent decreases and so does national income, unless imputed rent is estimated. Similarly, as home-owners pay off their mortgages, interest is transmuted into imputed net rent. Differences in relative amounts of net rent, interest, and profit in two or more economies, therefore, reflect variations in patterns of ownership and financing as well as differences in types of economic activity.

13. In contrast to profits, net rent is not reported industry by industry in the national income accounts. There are no sub-items, “net rent (received by individuals) from the steel industry,” “. . . from retail trade establishments,” and so on. Everything that is recorded as net rent paid to individuals is considered to arise in one sub-industry, “real estate,” which is one of three sub-industries comprising the main industry, “finance” (Chapter 3, § 9).

Net rent, therefore, occupies a unique position in national income classification. It is segregated as a type of factor payment, like interest, profits, and salaries and wages. It is also regarded as the amount of national income produced by a certain industry. In the latter respect it resembles the figure for value added by the manufacturing industry or by retail trade.<sup>1</sup>

14. Economic theory commonly distinguishes “interest,” “profit,” and “rent.” Although agreement is not complete on the kinds of economic function that this distinction reflects, interest is usually considered a risk-free reward for forgoing a continuing, immediate control over money and for abstaining from spending for consumption. Profit measures the reward for risk-bearing, and, in some definitions, for certain high-management or promotional functions. Rent (or “economic rent,” in this technical usage of economic theory) is a payment made for a service that does not owe its value to the work or other sacrifice of the successive persons who get the income from it. “Economic rent of land” is that part of the rent of land that is not due to any effort by the present or any preceding owner of it.

<sup>1</sup> Kuznets, *op. cit.*, I, 82–83.

Site rent in urban areas and a part of the rent due to extra fertility of the better farm lands are illustrations. The significance of economic rent in economic analysis is that the source of payment, the land, would continue in existence indefinitely, undiminished in its physical aspects, even if the rent were not paid to the owner of the land.

The totals of rent, interest, and profit in national income computations obviously give almost no indication of the amounts of rent, interest, and profit in the economic sense. Net rentals, in national income terminology, are partly payments for the managerial function of landlords and partly a return on man-made capital.<sup>1</sup>

15. Imputed rent (Chapter 2, § 18) can be ascertained in either of two ways. An imputed gross rental is estimated, and actual and imputed expenses are subtracted. Alternatively, a rate of interest or profit is applied to the estimated capital value of the property.

Two families are going to live in identical new dwellings, each costing \$9000. Both families have \$3000 invested in securities yielding \$150 a year, and no cash or other assets. The two houses are constructed within the year in question.

One family rents one of the new houses. The rental yields the landlord 5 per cent on his \$9000 investment. If the house is depreciated on a twenty-five-year basis, if repairs, and the like, consistent with this amount of depreciation are \$100 a year, and if the real estate tax is 2 per cent of full value, the rental starts at  $\frac{9000}{25} + 5$  per cent of \$9000 + \$100 + 2 per cent of \$9000 = \$1090 a year — a figure that is covered by the \$150 income from securities plus \$940 from other sources, say salary, of the tenant.

The other family sells its \$3000 worth of securities and borrows \$6000 on a twenty-five-year mortgage at 5 per cent, and buys the other new house. This family has annual cash outlays for the first year of \$300 (interest), \$180 (taxes), and \$100 (repairs); a total of \$580. The family is also forgoing the \$150 income it formerly received from the securities. Moreover, the house is depreciating \$360 a year. The family must, therefore, set aside \$360 each year if, at the end of the twenty-five-year period, it is to have a net worth of \$3000, as the renting family will have (so far as the dwelling costs alone are concerned). Part of the \$360 is used each year to amortize the mortgage. An amortization payment does not decrease or increase the owning family's net worth. It is simply an exchange of money in return for a

<sup>1</sup> United States Department of Commerce, *National Income in the United States, 1929-35*, p. 50.

cancellation of a liability of an equal amount; neither side gains or loses.

In computing the cost of home-ownership in the first year as compared with renting, the home-owning family must include the following items: interest (\$300), real estate taxes (\$180), repairs (\$100), income forgone from securities (\$150), and depreciation (\$360) = \$1090. Actually, the home-owner has an advantage because of certain provisions in the income tax. He can deduct the amount of the interest and real estate tax he pays in computing his personal net income under the federal income tax and some state income taxes. The tenant, on the other hand, cannot deduct any of the rent he pays. In addition, he has to enter as taxable income the \$150 he gets from his securities. A minimum blanket deduction granted to everyone mitigates the force of this discrimination, but, in general, the home-owner gets an appreciable saving under the income tax. For purposes of the present analysis, however, this saving will be ignored.

In the national income accounts the rented house will give rise to the following entries:

A. Factor payment (to landlord):

|                                   |       |              |            |
|-----------------------------------|-------|--------------|------------|
| Gross rent                        |       | \$1090       |            |
| Expenses:                         |       |              |            |
| Repairs                           | \$100 |              |            |
| Real estate taxes <sup>1</sup>    | 180   |              |            |
|                                   |       | <u>— 280</u> |            |
| Income before depreciation        |       | \$810        |            |
| Depreciation                      |       | <u>— 360</u> |            |
|                                   |       |              | \$450      |
| Factor payment (to workers, etc.) |       |              |            |
| Wages, etc. (repairs)             |       |              | <u>100</u> |
| Total factor payments             |       |              | \$550      |

B. Product:

|                               |       |              |       |
|-------------------------------|-------|--------------|-------|
| Consumption, by tenant (rent) |       | \$1090       |       |
| Disinvestment, by landlord    |       |              |       |
| (depreciation)                | \$360 |              |       |
| Real estate taxes             | 180   |              |       |
|                               |       | <u>— 540</u> |       |
| Consumption made possible by  |       |              |       |
| production during the current |       |              |       |
| year                          |       |              | \$550 |

<sup>1</sup> The treatment of this item in national income accounts is discussed below, Chapter 7, § 41

The national income accounts should be affected the same way by the owner-occupied house. Renting a house does indeed occasion some additional management and selling activities. But the amount of added national income so produced may be ignored as quantitatively unimportant. Hence the acts of purchasing and using for home-ownership must be recorded as follows:

A. Factor payment (to home-owner):

|   |            |              |
|---|------------|--------------|
| Imputed gross rent  |            | \$1090       |
| Actual expenses:  |            |              |
| Repairs   | \$100      |              |
| Real estate taxes   | <u>180</u> |              |
|   |            | <u>280</u>   |
| Imputed income before depreciation                          |            | 810          |
| Depreciation  |            | <u>- 360</u> |
| Imputed investment income                                   |            | \$450        |
| Imputed net income, after deducting \$300 paid to mortgagee |            | \$150        |
| Factor payment (interest to mortgagee):                     |            | 300          |
| Factor payment (of workers, etc.):                          |            |              |
| Wages, etc. (repairs)                                       |            | <u>100</u>   |
| Total factor payments                                       |            | <u>\$550</u> |

B. Product:

|   |            |            |
|---|------------|------------|
| Consumption, by home-owner (imputed rent)                       |            | \$1090     |
| Disinvestment, by home-owner (depreciation)                     | \$360      |            |
| Real estate taxes   | <u>180</u> |            |
|   |            | <u>540</u> |
| Consumption made possible by production during the current year |            | \$550      |

16. The same result is reached if, paralleling the net income that is recorded with the rented house (\$450), a net return of 5 per cent is computed for the owner-occupied house on the \$9000 cost.

17. If the home-owner's purchase of a house is treated as an act

of consumption, like the purchase of food, and not an investment, no imputed rent is recorded. The house vanishes forever from the national income accounts as soon as the purchase is made. In the example immediately above, the year of purchase would show \$9280 consumption (purchase price, repairs, and real estate tax). This would be \$8190 more than if the house had been rented (§ 15). Investment for the year would be zero, or \$8640 less than if the house had been rented (\$9000 less investment and \$360 less disinvestment, no depreciation being recorded). The total of national income would be diminished by the absence of \$450 imputed net income on the investment.

There are over eleven million urban and rural non-farm, owner-occupied houses in the United States.<sup>1</sup> They produced an annual imputed net rent ranging from \$0.8 billion to \$2.5 billion in the period 1929-44 (Table 12). In many European countries, on the other hand, owner-occupied houses, at least in the cities, have played a minor rôle. Exclusion of imputed net rent from owner-occupied houses would, therefore, understate the relative national income of the United States.

18. In principle, every purchase by a consumer could be regarded as an investment purchase. An imputed net income could be calculated by applying an interest rate (or an interest-and-profit rate) to the value of the commodity as long as it remained unconsumed. In practice, except possibly for automobiles and furniture, the amounts are probably not worth the trouble of an annual estimate.<sup>2</sup> Meanwhile, in drawing inferences from movements in year-to-year totals of consumption, the possibility must be kept in mind that consumers may be increasing or decreasing their personal inventories.

19. In the United States computations, Kuznets includes in national income an estimate of imputed net rent of owner-occupied houses. As a corollary, he always counts the purchase of a house as a use of savings (capital formation), never as consumer expenditure. The gross imputed rental is included in consumer outlay. The imputed net rent rises steadily from \$1.5 billion in 1919 to \$2.7 billion in 1924, then declines steadily to \$1 billion in 1934, rising again to \$1.4 billion in 1938.

<sup>1</sup> *Sixteenth Census, 1940, Housing*, II, part 1, p. 7.

<sup>2</sup> See Donald B. Marsh, "The Taxation of Imputed Income," *Political Science Quarterly*, December, 1943, p. 524.

The Department of Commerce estimates of national income, as published through February, 1947, do not include imputed net rent. They do include that part of gross imputed rent that goes to meet the wages and other factor payments earned in the course of making repairs. They include, in effect, the taxes paid by the home-owner (Chapter 7, § 41). And they include interest paid to individuals. A home-owner who has borrowed to build or buy his house "owns" only part of it, in an economic sense. A country whose "home-owners" own only a thin equity in their dwellings would increase its recorded national income only slightly by including imputed net rental in place of the Commerce Department computations. Gross imputed rental minus all current expenses including interest would be small.

In its revised estimate of national income, the Department of Commerce will include the net imputed rent of owner-occupied, non-farm residences. The imputed net income from owner-occupied farm housing is also to be included in the new national income series, but under the heading "entrepreneurial income from farming."<sup>1</sup> Correspondingly, the revised series of consumer expenditures will include total gross imputed rent.

**20.** Three series of data on net rent received by individuals in the United States are considered here: Kuznets, Commerce (old series), and Commerce (new series). The Commerce (old series) data are those appearing in the annual compilations of national income in the *Survey of Current Business*, including the February, 1947, issue. The new series reflect improvements in the sources of data and some changes in the concept of net rent, notably the inclusion of imputed net rent of home-owners. This series, however, which appeared in the *Survey of Current Business* of March, 1946, is part of an entire revision of the Commerce Department data on national income, and the new totals of national income have not yet been published.<sup>2</sup> Hence the new series is here not expressed as a percentage of national income. The new series is given in Table 12; the other two, in Table 11.

Kuznets and the Department of Commerce (old series) compute total net rent paid to individuals in the following way. They estimate (a) the total gross rent paid by business firms in each industry except agriculture (manufacturing, retail trade, and the like), as shown in

<sup>1</sup> Dwight B. Yntema, "Rents in the United States, 1929-44," *Survey of Current Business*, March, 1946, p. 19. <sup>2</sup> They are given in Appendix B below.

**TABLE 11**  
**Net Rents and Royalties Received by Individuals, United States,**  
**1919-43 (Kuznets and Commerce, old series)**

(in billions of current dollars)

| Year | Total Net Rent and Royalties<br>(Including Imputed Net Rent<br>of Home-Owners in Kuznets series) |                  |   |          | Imputed Net Rent<br>of Home-Owners<br>(Kuznets) |   |
|------|--|------------------|---|----------|---|---|
|      | Absolute<br>Amount <sup>a</sup>  |                  | Per Cent of<br>National Income <sup>b</sup> |          | Absolute<br>Amount <sup>a</sup>                 | Per Cent of<br>Total Net<br>Rents and<br>Royalties <sup>d</sup> |
|      | Kuznets  | Commerce         | Kuznets                                     | Commerce |   |   |
| 1919 | \$4.0  | •                | 6.2   |          | \$1.5   | 38.2  |
| 1920 | 4.3  |                  | 5.8   |          | 1.9   | 44.6  |
| 1921 | 4.5  |                  | 7.5   |          | 2.2   | 48.3  |
| 1922 | 4.9  |                  | 8.1   |          | 2.3   | 46.0  |
| 1923 | 5.2  |                  | 7.2   |          | 2.3   | 45.2  |
| 1924 | 5.6  |                  | 7.8   |          | 2.7   | 47.2  |
| 1925 | 5.5  |                  | 7.2   |          | 2.6   | 47.1  |
| 1926 | 5.1  |                  | 6.3   |          | 2.4   | 46.8  |
| 1927 | 5.1  |                  | 6.3   |          | 2.4   | 47.0  |
| 1928 | 4.9  |                  | 6.0   |          | 2.2   | 45.4  |
| 1929 | 4.9  | 3.6 <sup>e</sup> | 5.6   | 4.3      | 2.3   | 47.5  |
| 1930 | 4.3  | 2.9 <sup>e</sup> | 5.5   | 4.2      | 2.3   | 53.5  |
| 1931 | 3.0  | 2.3 <sup>e</sup> | 5.0   | 4.2      | 1.7   | 57.5  |
| 1932 | 2.1  | 1.5 <sup>e</sup> | 4.9   | 3.7      | 1.3   | 61.4  |
| 1933 | 2.1  | 1.5 <sup>e</sup> | 5.0   | 3.4      | 1.2   | 57.5  |
| 1934 | 1.9  | 1.7 <sup>e</sup> | 3.8   | 3.5      | 1.0   | 55.0  |
| 1935 | 2.1  | 2.0 <sup>e</sup> | 3.9   | 3.5      | 1.1   | 51.7  |
| 1936 | 2.2  | 2.1 <sup>e</sup> | 3.5   | 3.3      | 1.1   | 51.0  |
| 1937 | 2.6  | 2.2 <sup>e</sup> | 3.7   | 3.1      | 1.3   | 51.0  |
| 1938 | 2.6  | 2.2 <sup>e</sup> | 3.9   | 3.5      | 1.4   | 55.1  |
| 1939 |  | 2.3 <sup>e</sup> |   | 3.2      |   |   |
| 1940 |  | 2.3 <sup>e</sup> |   | 3.0      |   |   |
| 1941 |  | 2.8 <sup>e</sup> |   | 2.9      |   |   |
| 1942 |  | 3.4 <sup>e</sup> |   | 2.8      |   |   |
| 1943 |  | 3.8 <sup>e</sup> |   | 2.6      |   |   |
| 1944 |  | f                |   | f        |   |   |
| 1945 |  | f                |   | f        |   |   |
| 1946 |  | f                |   | f        |   |   |

<sup>a</sup> For 1919-38, left-hand column, Kuznets, *op. cit.*, II, 732. For 1929-43, right-hand column, *Survey of Current Business*, April, 1944, Table 15, p. 15; these *Survey of Current Business* data do not include imputed rent. See also Kuznets, *op. cit.*, II, 451.

<sup>b</sup> Kuznets, *op. cit.*, I, 217, and computed from *Survey of Current Business*, *loc. cit.*

<sup>c</sup> Kuznets, *op. cit.*, II, 735.

<sup>d</sup> Computed from Kuznets, *op. cit.*, II, 732, 735.

<sup>e</sup> Not including imputed net rent.

<sup>f</sup> Net rent not stated separately. "Interest and net rents," in billions of dollars: 1943, 9.7; 1944, 10.6; 1945, 11.8; 1946, 13.0. *Survey of Current Business*, February, 1946, Table 7, p. 8, and February, 1947, Table 4, p. 8.

TABLE 12

# Net Rents and Royalties Received by Individuals, United States, 1929-44 (Commerce, new series) <sup>a</sup>

(in billions of current dollars)

| Year | Total | Rented Properties | Owner-Occupied Non-Farm Residences (Imputed Net Rent) |
|------|-------|-------------------|---|
| 1929 | \$5.8 | \$3.2             | \$2.5   |
| 1930 | 4.8   | 2.5               | 2.2   |
| 1931 | 3.6   | 1.7               | 1.9   |
| 1932 | 2.6   | 1.1               | 1.4   |
| 1933 | 2.0   | 1.0               | 1.0   |
| 1934 | 2.0   | 1.2               | 0.8   |
| 1935 | 2.2   | 1.4               | 0.8   |
| 1936 | 2.6   | 1.7               | 0.9   |
| 1937 | 3.1   | 2.0               | 1.0   |
| 1938 | 3.1   | 1.9               | 1.2   |
| 1939 | 3.3   | 2.0               | 1.3   |
| 1940 | 3.4   | 2.2               | 1.3   |
| 1941 | 4.0   | 2.7               | 1.3   |
| 1942 | 4.9   | 3.5               | 1.5   |
| 1943 | 5.7   | 4.2               | 1.5   |
| 1944 | 6.1   | 4.5               | 1.6   |

<sup>a</sup> Dwight B. Yntema, "Rents in the United States, 1929-44," *Survey of Current Business*, March, 1946, Table 3, p. 19. In general, "the estimates for rents at both gross and net levels are subject to a considerable degree of uncertainty. . . . As yet . . . there has been no census of non-farm non-residential structures."

*Statistics of Income* and industrial censuses; (b) the total urban gross rent paid by individuals for residences; (c) the amount of total urban gross rent — which is (a) + (b) — that is received by corporations. By subtraction they arrive at (d) the total urban gross rent received by individuals. Then they estimate (e) the average ratio of net rent (before deducting mortgage interest) to gross rent; (f) the urban net rent, before deducting mortgage interest, received by individuals, by applying (e) to (d); (g) mortgage interest on individuals' urban rented property. By subtraction they obtain (h) the urban net rent, after mortgage interest, received by individuals, and add (i) net rent paid by farmers to non-farmer landlords, as estimated by the Department of Agriculture. The sum of (h) and (i) then represents total net rent



received by individuals.<sup>1</sup> In the new Commerce series some of these steps are not used or are modified, as indicated below.

Quantitatively, the most important step is (b), the estimate of the gross rent paid by individuals for residences. Kuznets' estimate utilizes the *Census of Population* (1920 and 1930) and the *Real Property Inventory of 1934* for number of houses and the percentage rented. The median rent for 1930 (*Census of Population*) is the basis for computing average rent, which is extrapolated by Bureau of Labor Statistics rent indexes for other years. These sources are also utilized in the computations of imputed rent given by Kuznets and Commerce (new series).

The ratio assumed for net rent, before deduction of mortgage interest, to gross rent is also important and difficult to estimate. Kuznets used sample studies of operating expenses for apartment buildings in 1935 and office buildings in 1934, and Commerce (old series) used a consensus of authorities.

For its new series the Commerce Department has the advantage of its independent estimate for 1941 of net rents realized by individuals from non-farm properties, based chiefly on *Statistics of Income*, but with several important adjustments of data from that source. From the resulting net figure and a comparable estimate of gross rents, a ratio of net to gross was derived that was helpful in estimating the net-rent total for 1929. For other years, except 1943 and 1944, net rents reported on tax returns for net incomes of \$5000 and over were raised to give a total of net rents received by individuals. The raising was done by using an adjusted ratio of total wages and salaries (in national income computations) to wages and salaries reported in returns with \$5000 and over net income. The adjustment of the wage-and-salary ratio was determined from the relation of this ratio to corresponding net-rent ratios in 1929 and 1941. The net-rent estimates for 1943 and 1944 were based on the relation shown between wages and salaries, and rents, in 1938-42.

Net farm rents received by landlords living on farms are not included in the total of net rent received by individuals, except in

<sup>1</sup> For steps (a) to (d), see Kuznets, *op. cit.*, II, 546, 742-49; for steps (e) to (i), *ibid.*, pp. 546, 750-54. See also *ibid.*, I, 82-83, 110-11, 114, and II, 451. For Commerce (old series), see United States Department of Commerce, *National Income in the United States, 1929-35*, pp. 278-79. Some information on sources for the new series is given in a reprint of the Yntema article (see immediately preceding footnote) that contains an "additional note on sources and methods." The Commerce (old) series also includes net farm rents accruing to landlords living on farms.

Commerce (old series); they are a part of total entrepreneurial income (profits) in the industry of farming.

Royalties received by individuals are in general included in the net-rent total.<sup>1</sup>

This condensed description gives an inadequate impression of the ingenuity and daring that the estimators have had to show in order to obtain any estimates at all for net rent received by individuals in the intercensal years.

**21.** According to Kuznets, net rent, including imputed net rent on owner-occupied houses, rose steadily from \$4 billion in 1919 to \$5.6 billion in 1924 and declined slightly to \$4.9 billion in 1929. The depression brought it down to \$1.9 billion in 1934, and it recovered only to \$2.6 billion, still well below the 1919 total, by 1938. As a percentage of national income, it was a minor item throughout 1919-38, ranging from 6 per cent to 8 per cent until 1930 and stabilizing at about 4 per cent in the latter nineteen-thirties.

The Commerce (old series) total of net rent differs considerably from Kuznets': (1) it does not include imputed rent on owner-occupied houses; (2) it assumes a higher ratio of net rent to gross rent than does Kuznets'.<sup>2</sup> From \$3.6 billion in 1929 it declined to \$1.5 billion in 1932 and 1933, and rose to \$2.3 billion in 1940. The war moved it up to \$3.8 billion in 1943.

The Commerce (new series) of net rents (Table 12) is somewhat lower than the old series, aside from imputed rents, up to 1942, partly owing to changes in classification.

**22.** In principle, rent received by non-resident individuals from property located in the United States is excluded from national income, and rent received by residents of the United States from property abroad is included (Chapter 1, § 1). In fact, the rent total includes only rent originating in the United States, regardless of the residence of the recipient (§ 62), except that the latest Commerce Department estimates appear to be more nearly on a residence basis.

#### IV. INTEREST

**23.** Interest, like rent, may be paid to a business enterprise or to an individual. The national income total includes only the interest paid to individuals. All other interest appears as profit of the recipi-

<sup>1</sup> Kuznets, *op. cit.*, pp. 424-26; Yntema, *loc. cit.* (reprint), p. 5.

<sup>2</sup> Kuznets, *op. cit.*, II, 451.

ent business firm, and would be double-counted if included again as interest (cf. § 9). The amount of interest, like the amount of rent, therefore, depends on the pattern of ownership as between business concerns and individuals, and upon the pattern of financing by the user as between owning outright or with the aid of borrowed money, or renting. For example, if corporations come to own more of the property they use and purchase it by issuing more bonds and less stock than in some other place or period, the interest component in the national income will be higher and the profit and net rent components lower.

The interest paid to a corporation is eliminated by subtracting it from the interest paid by the same corporation. The result is a "net" item of interest paid by the corporation. The sum of these net items for all corporations is the amount of corporate interest paid to non-corporate entities.

If the retail store in § 9 borrowed money from the other corporation and bought the site, instead of leasing it, the factor payments attributed to the retail store would include the interest it paid on the loan, although the interest was not in fact paid to individuals. Among the factor payments made by the receiving corporation, the interest it received would enter as a negative item under the heading, "net interest paid." Consequently, the service rendered by the site would be considered created in the retail trade industry. If the site were leased, on the other hand, the service would be attributed to the real estate industry.

In computing national income the subtraction of interest received from interest paid is done industry by industry. Consequently, if an industry pays out less interest than it receives, a negative amount of interest will be recorded among the factor payments originating in that industry. This apparently anomalous result is considered further in Chapter 9, §§ 10-13.

**24.** The national income total cannot, however, include all interest payments to individuals. National income is a measure of production. Some interest payments reflect production, but others do not. For example, A lends money to B in order that B may purchase a consumer good now rather than later. Consequently, A forgoes the possibility of purchasing that amount for himself now, but he can make such a purchase later, when B repays him. To isolate the principle at issue, it is assumed that the total amount of production in

the nation at both points of time will be at a given rate, whether or not the loan is made (if B does not borrow to buy now, A will buy now, and B will buy later). In effect, A and B have arranged a barter with a money supplement; A gives B a product now in exchange for getting a product later, plus a reward (interest) for waiting. But national income deals only with the production of goods, not with increases in satisfaction that come from exchange of goods.

Consequently, this type of interest payment must be distinguished, for national income purposes, from the kind that reflects an actual increase in production over what would have occurred if the loan had not been made. In the latter case, A forgoes the possibility of consumption now, so that B may use a corresponding amount of the nation's resources now to produce a capital good that, in being used up in some future time, will yield a total of consumer goods greater than the capital good. The excess is interest (or partly profit, if risk is involved).

These considerations support the exclusion from national income of interest payments on loans made for consumption. More precisely, they support the exclusion of any interest payment that is not simply a part of the independently computed total return on a building, a piece of equipment, or other specific capital. The total return includes, of course, both money return and imputed return. In practice, then, the considerations adduced above exclude interest that does not itself cut down the amount of money or imputed profit entered in national income. The total money return or imputed return on a capital good ordinarily contains a money or imputed profit element. This element is computed by subtracting from the total return the amount of interest paid. Thus, the determining item for the national income total is never the interest *per se* or the profit *per se*, but the total investment return on the building, stock of inventory, and so on. For the national income total it is immaterial whether this return is called all profit or partly profit and partly interest.

The Department of Commerce estimates of national income include interest on consumer debt.<sup>1</sup> Kuznets includes such interest if paid to corporations (finance companies, for example).

<sup>1</sup> For a discussion of this issue, see Milton Gilbert, "U.S. National Income Statistics," *Economic Journal*, April, 1943, p. 82, and Richard Stone, *ibid.*, p. 83. See also Edward F. Denison, "Report on Tripartite Discussions of National Income Measurement," *Studies in Income and Wealth*, X, pp. I-18, I-19 (mimeograph), and discussion, pp. I-61, I-62.

25. The available data on interest payments do not show how much of the total goes to individuals. An estimate has been made, however, using "rather heroic assumptions."<sup>1</sup> These assumptions, as described by Kuznets for the National Bureau series through 1938, are:

(a) That all interest on private short-term debt throughout the economy is paid to business firms, chiefly banks, by business firms. The payment is made for an intangible product (credit) used in business. Consequently, the interest, like a payment for raw materials, is not itself a factor payment. It is instead a part of the gross receipts of the credit-granting firms.

(b) That all interest on long-term debts is paid to individuals and therefore should be included in national income as a factor payment. One exception is made to this assumption. The computations recognize that the interest on some of the long-term government bonds is received by corporations and hence should not be counted. Cognizance is taken of this fact because during the nineteen-twenties and thirties *Statistics of Income* compiled the interest reported by corporations as received from bonds exempt from the corporation tax. (Recently, more data have been made available by the Treasury on the distribution of the government debt.) Aside from these bonds it is assumed that all long-term private debt and all other government debt, long-term or short-term, is held by individuals, excepting private or public debt held by states or local subdivisions, for which specific allowance is made.

(c) That the term "individuals" applies to commercial banks, savings banks, life insurance companies, building and loan associations, and charitable and educational institutions, with respect to their receipt of interest on long-term loans (and dividends — see § 47). A commercial bank, for example, is treated as if it were two separate bodies. One body is a business firm, receiving short-term interest, service charges, and so on, and paying out salaries, wages, and dividends. The other body is an aggregation of individuals — that is, depositors — who are deemed to receive the interest on the long-term loans made by the bank. The long-term loan interest is included in national income, as part of income "paid to individuals"; the interest actually credited to depositors is disregarded. This problem is discussed in more detail in §§ 58–61.

<sup>1</sup> Kuznets, *National Income and Its Composition, 1919–1938*, I, 101.

(d) That all unincorporated business firms other than farms and other than those included in "individuals" paying mortgage interest (cf. § 9) have no long-term debt outstanding, hence pay no interest to individuals. However, the Commerce Department estimate specifically includes interest on mortgages on stores.<sup>1</sup>

Under these assumptions, the aggregate of interest paid to individuals is computed by:<sup>2</sup>

(1) estimating the total long-term debt of corporations from balance-sheet data compiled in *Statistics of Income*, multiplying by an average interest rate derived from sample data, and subtracting the amount of tax-free government bond interest received, these steps being taken industry by industry except for those in (2), (3), and (4) below. Conceivably, therefore, as noted in § 23, for any one industry a negative amount of interest paid, or, more precisely, "interest originating in the industry," may be shown.

(2) adding the reported interest on long-term debt of public utilities and subtracting long-term interest received by these firms, as reported from special governmental sources;

(3) adding the interest paid by farmers on mortgages, as estimated by the Department of Agriculture (contract interest minus estimated defaults);

(4) adding interest paid on individuals' urban mortgage debt plus interest paid on farm mortgages by non-farmers (contract interest minus estimated defaults);

(5) adding interest paid on all government debt, short-term or long-term, minus interest received by state and local governments (the federal government's interest receipts are evidently assumed to be negligible);

(6) subtracting an estimate of the amount of interest on long-term domestic debt paid to foreigners, and adding an estimate of interest received by domestic holders of long-term foreign securities.

The total of interest paid to individuals is thus obtained by piecing together information from many parts of the economy. And there is no over-all series of somewhat similar data that can serve as a "controlling total" (Chapter 9, § 9) to judge how much has been omitted.

<sup>1</sup> Marvin Hoffenberg, with assistance from Mabel S. Lewis, "Estimates of National Output . . .," *Review of Economic Statistics*, May, 1943, p. 117.

<sup>2</sup> Kuznets, *op. cit.*, I, 115; II, 408-09, and part IV, especially pp. 546, 750-52, 828-31, and 844-45. Commerce adds interest payable rather than interest paid, in steps (3) and (4).

TABLE 13  
Interest Received by Individuals, United States, 1919-43  
(Kuznets and Commerce)

(in billions of current dollars)

| Year | Total Interest Received<br>by Individuals |  | Government Interest<br>Received by Individuals |  | All Other Interest<br>Received by Individuals |  |
|------|---|--|--|--|---|--|
|      | Absolute<br>Amount <sup>a</sup>           | Per Cent of<br>National<br>Income <sup>a</sup> | Absolute<br>Amount <sup>b</sup>                | Per Cent of<br>National<br>Income <sup>c</sup> | Absolute<br>Amount <sup>d</sup>               | Per Cent of<br>National<br>Income <sup>e</sup> |
| 1919 | \$3.2                                     | 5.0  | \$1.0  | 1.6  | \$2.2   | 3.6  |
| 1920 | 3.7                                       | 4.9  | 1.2  | 1.7  | 2.4   | 3.2  |
| 1921 | 3.9                                       | 6.5  | 1.3  | 2.1  | 2.6   | 4.4  |
| 1922 | 4.0                                       | 6.6  | 1.3  | 2.2  | 2.7   | 4.4  |
| 1923 | 4.2                                       | 5.9  | 1.3  | 1.9  | 2.9   | 4.0  |
| 1924 | 4.4                                       | 6.1  | 1.3  | 1.8  | 3.1   | 4.3  |
| 1925 | 4.6                                       | 6.0  | 1.3  | 1.7  | 3.3   | 4.3  |
| 1926 | 4.7                                       | 5.8  | 1.3  | 1.6  | 3.4   | 4.2  |
| 1927 | 4.9                                       | 6.2  | 1.3  | 1.6  | 3.7   | 4.6  |
| 1928 | 5.3                                       | 6.5  | 1.2  | 1.5  | 4.0   | 4.9  |
| 1929 | 5.6                                       | 5.9  | 1.3  | 1.4  | 4.3   | 5.0  |
| 1930 | 5.7                                       | 6.0  | 1.3  | 1.6  | 4.5   | 5.8  |
| 1931 | 5.7                                       | 6.0  | 1.3  | 2.1  | 4.4   | 7.4  |
| 1932 | 5.5                                       | 5.6  | 1.4  | 3.2  | 4.2   | 9.9  |
| 1933 | 5.0                                       | 5.1  | 1.5  | 3.5  | 3.5   | 8.4  |
| 1934 | 4.8                                       | 5.2  | 1.6  | 3.2  | 3.3   | 6.8  |
| 1935 | 4.6                                       | 5.1  | 1.5  | 2.7  | 3.2   | 5.8  |
| 1936 | 4.6                                       | 5.1  | 1.5  | 2.4  | 3.1   | 4.9  |
| 1937 | 4.7                                       | 5.1  | 1.7  | 2.4  | 3.0   | 4.3  |
| 1938 | 4.6                                       | 5.1  | 1.7  | 2.6  | 2.9   | 4.4  |
| 1939 |   | 5.1  |  |  |   |  |
| 1940 |   | 5.1  |  |  |   |  |
| 1941 |   | 5.2  |  |  |   |  |
| 1942 |   | 5.5  |  |  |   |  |
| 1943 |   | 6.0  |  |  |   |  |
| 1944 | e   | e  |  |  |   |  |
| 1945 | e   | e  |  |  |   |  |
| 1946 | e   | e  |  |  |   |  |

<sup>a</sup> Left-hand column, Kuznets, *op. cit.*, I, Table 22, p. 216; right-hand column, *Survey of Current Business*, April, 1944, Table 15, p. 15.

<sup>b</sup> For state and local governments, "interest originating" in government; Kuznets, *op. cit.*, II, 811, 828-31.

<sup>c</sup> Computed from *ibid.*, I, 322-323.

<sup>d</sup> *Ibid.*, I, 318-19.

<sup>e</sup> Not available. See note f to Table 11.

**26.** In the United States, for the years 1919–38 inclusive (Kuznets), the annual total for interest received by individuals rose steadily from \$3.2 billion in 1919 to \$5.7 billion in 1930 and again in 1931 (Table 13). As private debts were liquidated in the depression, the total dropped, despite a growing governmental debt, to \$4.6 billion in 1935 and was still at that level in 1938.

The Department of Commerce computations reach a slightly higher figure in each of the years 1929–38. During World War II the interest total (Commerce) rose slowly to \$6 billion in 1943. It was somewhat higher, nearly \$9 billion, in 1946 because of the large federal war debt. But in the forthcoming revision of its national income series, the Department of Commerce will exclude interest on all government debt, for reasons given in Chapter 7, § 68.

The total of interest paid to individuals (Kuznets) was about 5 or 6 per cent of the national income during 1919–29. It then rose to 13 per cent in 1932 as the absolute total of national income dropped, and declined to 7 per cent in 1938 as national income recovered. In the Commerce Department series it dropped to 4 per cent in 1943.

## V. CORPORATE PROFITS

### A. Ambiguity of "Profits"

**27.** Profits, as compiled for national income estimates, represent a mixture of interest return on capital, reward for risk-taking, wages of management, and economic rent. Profits also include a large element of labor income in addition to wages of management, in unincorporated enterprises (§ 4).

Profits share with rent the possibility of being a negative amount. When they are negative, the interpretation in terms of factor payments is difficult. A concern pays \$1000 in wages, has no other expenses, and sells the product for \$800. In this case the national income accounted for by labor is commonly said to be \$1000 and that by capital, – \$200. Another interpretation is that labor, under poor direction from the capitalists, produces only \$800 worth of product (national income), to which capital or management adds no value (see also § 32).

Philanthropic organizations that furnish services free of charge do not incur a loss in the sense that a business firm does when its sales receipts fall short of its current expenses. There is not the same implication of waste of resources or failure of purpose. Instead, the



churches, hospitals, labor unions, and similar organizations are treated as associations of individuals. They receive investment income and transfer payments (gifts) as individuals, and as individuals they spend money for "consumption" on the creation of services which they use themselves or give to others.<sup>1</sup>

**28.** By attaining a monopoly or quasi-monopoly position, a concern may increase its own profits, through raising its selling prices or (monopsonist) forcing down the prices of the goods and services it buys. If it increases its selling prices, the total money national income may increase. Deflating by an index of product prices will remove a part, all, or even more than all of the increase. But in any event the recorded share of the concern in the real national income will have risen, by virtue of its exercise of monopoly power. The concern can be regarded as "producing" that share of the national income only in the formal sense that consumers are willing to give it so much because they have no other place to go.

As these remarks imply, it is possible to construct at least a hypothetical example showing that the total national income, even when deflated by a product-price index, can increase merely because one or more concerns gain some degree of monopoly power and, by raising their selling prices, bring about a reallocation of resources. The technical possibility of such an increase, whether or not it is important in real life, has, of course, created misgivings among national income analysts, misgivings that have as yet been only partly resolved. The issue is allied to the broader one of what kind of product-price index should be employed. It is examined somewhat further in Chapter 6, §§ 85-90, where the distinction advanced by J. R. Hicks between "productivity" and "welfare" is noted. Hicks's position is that the monopolistic profit element, or any other existing wedge driven between true cost and price (an "indirect" tax, for instance), must be included if "welfare" is to be measured, but excluded if "productivity" is to be measured.

The monopolizing concern may cause not a net increase but a net decrease in the money national income (that is, even before adjustment by a price index). The high selling price of its product reduces the profits of its business-firm customers. More important

<sup>1</sup> For the treatment of non-profit organizations, see Edward F. Denison, "Report on Tripartite Discussions of National Income Measurement," *Studies in Income and Wealth*, X, p. I-20 (mimeograph).

still, the high price of the product may so restrict purchases that total output in the economy declines. The resulting decrease in total national income will not be put to the account of the monopoly. It will appear as lower real profits of other firms, lower real wages of those who work, and unemployment. Then the monopolist's share in the national income may be greater than ever: its own profits have risen and national income has fallen.

The reverse effects may follow if a concern sells its product at a loss. Conceivably, the total national income could be larger than if the concern set its price high enough to break even. The product may be a key one, in the sense that a fall in its price removes many obstacles to production. One possible development of national income analysis is to attempt, in conjunction with the main body of economic theory, rough estimates of how much the total income of a given area and period has been or may be increased or decreased by a change in price policy of one or a few large economic units. The Tennessee Valley Authority's electricity rates and the prices of aluminum and nickel illustrate such fields of study.

29. An industry, though not monopolized, may be able to avoid meeting some of the costs for which it is directly responsible. Consequently, the users of its products are able to buy them at prices that are lower, or the industry shows profits that are higher, than would obtain if all costs had to be met by those who cause them. Before the bituminous-coal-burning industries of a large city are forced by law to use hard coal or otherwise eliminate the smoke nuisance, the housewives pay large laundry bills (or work more, at home). This extra expense does not appear in the accounts of those who are economically responsible; that is, the users of the products made by the coal-burning industries. Conversely, an industry may be producing as a free by-product certain benefits that would command a money price if it were not for technical difficulties of collection of money from the beneficiaries; for example, inventions of a type that cannot be patented or kept secret. The contribution to the national income as measured by the receipts from the invention is understated. Considerations such as these, where the "marginal social net product" diverges from the "marginal private net product," are numerous and important,<sup>1</sup> and they justify added caution in interpreting various breakdowns of the national income total, even when they do not seriously affect the total itself (see also § 32).

<sup>1</sup> A. C. Pigou, *Economics of Welfare* (4th ed.), chap. IX.

## B. Depreciation, Obsolescence, and Depletion

30. Profits are computed after deducting depreciation and, in some cases, obsolescence. The accountant, not the economist, is the one who sets the depreciation charges. To the accountant, the computation of depreciation for any one year is a process of cost allocation rather than one of periodic valuation, because one of his chief aims is to facilitate intra-plant comparisons, between departments and between periods of time, in order to reveal and analyze variations in operating efficiency.<sup>1</sup> Usually the depreciation charge for the year is set by estimating the length of life of the asset in years and dividing this number into the purchase price of the asset less its ultimate salvage value. Consequently, the book value resulting from cost less depreciation has no close relation to the amount the plant or machine would bring if it could be, and were, sold. The allowance for obsolescence does tend to bring the book value nearer the market value, if there is any market, but obsolescence allowances are probably not very common (Chapter 2, §§ 8-12).<sup>2</sup>

The formal, conventional nature of the depreciation charges that are embedded in national income figures must be kept in mind in interpreting national income totals or sub-totals. During the two decades 1919-38 the estimated annual total of depreciation, depletion, and obsolescence fluctuates narrowly between \$8 billion and \$11 billion (Kuznets). The Department of Commerce estimate, which is less comprehensive than Kuznets', fluctuates in the \$6 billion to \$8 billion range during 1929-44. Kuznets adjusts the depreciation, as recorded in *Statistics of Income*, to current replacement cost; the aim is to state the capital consumption of any one year in terms of the price level of capital assets in that year, instead of in terms of what the assets cost in a previous year. Consequently, in years of low prices (1932, for example) the reported depreciation data are adjusted downward by Kuznets.<sup>3</sup> The Commerce Department does not attempt such an adjustment. Aside from this adjustment, both Kuznets and the Department rely on *Statistics of Income* for corporate data and on various sources for the remainder. Depreciation on owner-occupied homes

<sup>1</sup> Cf. James L. Dohr and Howell A. Ingraham, *Cost Accounting* (3d. ed.), pp. 386-87.

<sup>2</sup> For a general discussion of fixed-asset valuation in national income, see Solomon Fabricant, "On the Treatment of Corporate Savings in the Measurement of National Income," *Studies in Income and Wealth*, I, 122-28.

<sup>3</sup> A critical analysis of this procedure is given in Wendell D. Hance, "Adequacy of Estimates Available for Computing Net Capital Formation," *Studies in Income and Wealth*, VI, 264-66.

is deducted by Kuznets, since he includes gross imputed rental in computing national income. He also deducts depreciation on government property. Of course, neither of these deductions is allocated against the "profits" component in his national income series. The Commerce Department does not make either of these deductions.<sup>1</sup>

**31.** When natural resources are removed from the earth in the process of production, as in the oil industry, a depletion charge is made against the sales receipts, in computing profits. In principle, the depletion charge recovers the capital invested in the natural resources. But the amount of capital invested may mean, not the cost sunk in discovering or obtaining the resources (cost depletion), but the value of the resources when discovered, a value that may be far greater than the cost. The income-tax data reflect largely either this "discovery depletion" or an arbitrary amount expressed as a percentage of gross receipts; in either case the depletion deductions are much larger than would be computed on a cost basis. Chiefly because of this consideration, the Commerce Department has decided not to subtract depletion at all in its most recently published series of corporate profits. The Department does not include in national income for any given year the excess of the value of discoveries of natural resources during the year over the factor cost involved in making the discoveries. Consequently, it considers that it has logical grounds for refusing to deduct depletion in so far as depletion is based on the excess of this discovery value. Because of the difficulty of ascertaining what part is cost depletion, all depletion is ignored.<sup>2</sup> This reasoning, however, allows the inclusion in national income, indirectly, of certain types of capital gains, a point discussed in § 35.

**32.** When wages are paid to construct a piece of capital equipment, like a machine or a building, the outlay is capitalized (Chapter 2, § 2). The wage earner's receipts are counted as national income. But it may develop that the wage earner's work produced nothing that is in

<sup>1</sup> The estimates of depreciation (including obsolescence) and depletion are given in Chapter 6 as follows: on government property, § 29, Table 22; residential property, § 33, Table 24; non-residential private structures and producers' durable equipment, § 33, Table 25; private structures and producers' durable equipment, §§ 34-39, Table 26; total, § 69, Table 32.

<sup>2</sup> Gardner F. Derrickson, "Trend of Corporate Profits, 1929-45," *Survey of Current Business*, April, 1946, p. 12; Milton Gilbert, "U.S. National Income Statistics," *Economic Journal*, April, 1943, p. 77. It is not evident that even the cost of discovering natural resources is entered in capital formation and hence in national income. See Edward F. Denison, "Report on Tripartite Discussions of National Income Measurement," *Studies in Income and Wealth*, X, pp. I-13, I-14 (mimeograph), and discussion, p. I-63.

demand. As an extreme example, suppose that an entrepreneur spends \$500,000 on wages and \$1,500,000 on materials to construct a hotel in a scenic but remote location, just at the end of a business boom. For a year or so the hotel attracts enough customers barely to cover operating expenses, but it then becomes apparent that further operation can result only in an excess of cash outlay over cash receipts, and the hotel is abandoned. Two questions arise: against which kind of factor payment should the loss be charged, and to what year?

Tested by the judgment of the market, the wages paid to the construction workers appear in retrospect to have been payments for non-productive work on the same level as the most useless type of relief work. It might be inferred that the accounts of the earlier year should be reopened and adjusted by eliminating from the national income of that year the wages paid to the construction workers. But such a procedure has never been advocated, much less attempted. Usually a loss upon abandonment is charged to surplus, as a capital loss, and never shows up in the annual income statements of the business concerns. Hence it does not affect the national income accounts even in the year of abandonment. (If foreseen, it is spread over the years preceding abandonment.) This negative charge is termed "obsolescence," and is equal to that part of the cost of the property that has not already been charged off in yearly depreciation. Instead of being a negative entry in wages, it is, if noted at all, charged against the profits made by other concerns, in computing a total of profits for the whole economy for the year of abandonment. This procedure has its usefulness, but is open to misinterpretation. The work done in the earlier year was productive in the sense that the employees fulfilled their part of the bargain in exchange for the money payment. Their work was productive in the sense that the hotel, immediately upon completion, could have been sold for enough to cover its cost of production. But over the span of years the labor is seen to have been unproductive in the sense that it did not lead to the creation of a service that consumers thought worth purchasing.

The prevailing accounting procedure, by its refusal to mark down the income credited to the earlier year, distorts the relative shares in national income of the earlier and later years in terms of hindsight, but not in terms of what seemed evident at the time.

### C. Capital Gains and Losses

**33.** A "capital gain," as distinguished from "profit," in prevailing national income terminology, is commonly thought of as a gain in the market value of an asset due neither to the application of current factor activity to the asset nor to the wearing-down or drawing-down of some other asset. The gain in value must not be due to the application of labor to the asset, or to the adding of materials or parts to it, or to the mere passage of time (interest), or to the rendering of some service in which the asset is an aiding instrument. Likewise, if the decline in value is to be a capital loss, it must not be attributable to use of the asset in producing some other assët or rendering a service.

Under the definition of capital gain above, the increase in prospective yield must come as a windfall; that is, as something unexpected and unconnected with factor activity.

This definition permits capital gains and losses to arise in peacetime chiefly from two sources: a change in the prospective net yield from an asset and a change in the rate of interest. In war, damage due to enemy action may be considered another type of capital loss.<sup>1</sup>

In this definition the gain or loss is assumed to exist in real terms; that is, after deflation by whatever product-price index used. Gains or losses resulting from a change in the purchasing power of money, or because of changes in the pattern of consumer wants, or of improvements in methods of production, are best isolated for treatment under the index-number problem (Chapter 6, §§ 73-90).

**34.** The increase in prospective yield from an asset may be evidenced by a rise in the value of a representative intangible, a share of stock, for instance. National income analysis, however, is concerned with the underlying tangibles or non-representative intangibles, and ignores fluctuations in values of representative intangibles (Chapter 2, § 3).

**35.** Aside from a change in values resulting from an alteration in the rate of interest, the only important example that comes to mind is an unanticipated discovery of natural resources. The theory of such a real capital gain might be developed as follows: "Unanticipated" refers to that part of the value of the discovery that cannot be assigned to profits even when the term "profits" is defined to include an allowance for risk in undertaking exploration. The unan-

<sup>1</sup> Cf. the estimates for the Netherlands in J. B. D. Derksen, *A System of National Book-keeping*, p. 30.

ticipated part of the increase in value is, therefore, not the result of factor activity. For example, a company drills oil wells in a certain area over a certain period of time on the assumption, based on experience, that 30 per cent will be dry holes. On this assumption, an outlay of \$1,000,000 will produce wells worth \$1,200,000, the \$200,000 profit being what the competitive situation allows in the light of the uncertainty of the estimate. In fact, the company happens to find only 10 per cent dry holes, and it brings in wells worth \$1,800,000. The extra \$600,000, under the factor-activity test, is a capital gain, not to be included in income.

In practice, it does not seem worth while to make such a distinction. Even in large-scale drilling of oil wells, to say nothing of exploring for copper or gold or other deposits, the degree of uncertainty of the estimate of success can scarcely be defined closely enough to allow allocation of the gain between factor payment (profit) and capital gain. It seems preferable, therefore, to include the entire market value of the newly discovered deposit in the national income, as a piece of capital equipment that was "produced" by the process of exploration. Correspondingly, losses from unsuccessful explorations should be entered as negative items.

If some of the profit from discovery is excluded from national income in the year of discovery, it may yet be included, in later years, by charging depletion on a "cost" basis. A prospector, spending \$100,000 in wages, discovers a deposit worth \$1,000,000. If, contrary to the argument advanced in the immediately preceding paragraph, only \$50,000 (for example) is allowed as a reasonable profit in terms of factor payment, the extra \$850,000 is excluded from the national income of that year. The "cost" value (cost including reasonable profit) of the deposit is \$150,000. The deposit is mined in later years, and as the ore is sold a charge for depletion is entered against sales proceeds. If the depletion charge is based on the \$150,000 cost value rather than the \$1,000,000 "discovery value," the \$850,000 will get in the national income accounts after all, as profit from the sale of ore. In the United States, the actual allowances for depletion are so arbitrary and capricious that it is difficult to say whether much of the discovery value gets into the national income estimates, but on the whole it appears that it has not done so until the recent change in Commerce Department procedure (§ 31).

The discovery of new deposits may cause a fall in the value of old

deposits. The fall in value should in principle be taken into account in the product-price index, which should include capital goods. In practice, this is not done.

Quantitatively, the points covered in the two preceding paragraphs are of very little importance relative to the total of national income.

If someone on a pleasure trip should stumble across a valuable natural deposit, no doubt the national income should not be considered increased; no factor activity at all has occurred. In practice this possibility is of no importance.

**36.** A rise or fall in the value of real assets caused by a change in interest rates that reflects a movement in time preference or liquidity preference should not be allowed to affect the total of national income under the prevailing concept, which ignores those preferences. If the change in rates is caused by changes in the technical effectiveness of capital, the results will appear in the price or quantity of the products produced by the capital; therefore, here too the rise or fall in the value of existing capital instruments should not be included in the national income.

**37.** Capital gains and losses, even when due to speculative fever, should not be ignored when the national income total is broken down into saving and spending, into incomes going to families within specified income classes, and so on. It may still be inadvisable to incorporate such gains and losses in the main body of data, but they are necessary for analyzing consumer behavior. A case in point, discussed in Chapter 8, § 24, is the fact that individuals, apart from unincorporated concerns, are estimated by Kuznets to have saved as much in 1932 as in 1929.<sup>1</sup> A distribution of families according to size of income gives only a distorted picture of their relative command over the economy's resources, not only because of differences of wealth at the start of the period, but because of changes in wealth during the period through capital gains and losses. The conclusions drawn from studies of "inequality of income" that ignore capital gains and losses are apt to encourage incorrect inferences even if they are not themselves directly in error.

**38.** The Commerce Department and Kuznets exclude capital gains and make no deduction for capital losses, wherever it is possible to adjust the data accordingly.<sup>2</sup> For the most part these adjustments

<sup>1</sup> Kuznets, *National Income and Its Composition, 1919-1938*, I, 276, Table 39.

<sup>2</sup> As to corporate profits, see Gardner F. Derrickson, "Trend of Corporate Profits, 1929-45," *Survey of Current Business*, April, 1946, p. 12. Capital gains and losses are eliminated "so that profits will reflect current operations only."



probably remove only gains and losses on holdings of representative intangibles. The adjustments made for depreciation (§ 30) and change in inventory (§§ 41, 42) are entered separately, under those headings.<sup>1</sup>

#### D. Removal of Price-Fluctuation Element in Inventory

**39.** A concern that sells tangible products, not merely services, will ordinarily include among the assets in its balance sheet the materials on hand that are to go into the product, the amount of partly finished product on hand, and the finished product not yet sold. These items are listed as "inventory." They will usually be entered at a value approximating, not the amount the concern can probably sell them for, but the amount it cost the firm to produce or acquire them. For the partly finished and the finished product, this amount will include not only the cost of materials that have gone into the product, but also the cost of supplies used up and the labor utilized in processing the materials. When the product is sold, the asset side of the balance sheet loses a tangible-asset value from its inventory account, and normally experiences a more than corresponding gain in the cash item (including accounts receivable). The excess of cash received over asset lost is profit and forms part of the national income. It is reflected in an increase in the surplus item on the liabilities side of the balance sheet.

If the concern sells the product for less than the value at which it was carried on the balance sheet, the total of assets shrinks and the surplus item shrinks correspondingly. The excess of inventory decrease over cash increase is a loss and forms a negative element in the total of national income.

Normally, the concern then spends a part of the cash to obtain raw materials, semi-finished goods, or finished products to replenish its inventory.

**40.** The concern may find that the price it must pay to replenish the inventory has risen. It may have to use all the money it obtained from the sale if it is to restock with the same physical inventory as before. Did the concern, under these circumstances, actually realize a profit? Did the sale really produce national income?

Suppose that firm S, in the business of buying and selling a raw material, had started its existence in the preceding year with \$2000

<sup>1</sup> For a discussion of the treatment of capital gains and losses in national income, see Roy Blough and William W. Hewett, "Capital Gains in Income Theory and Taxation Policy," *Studies in Income and Wealth*, II.

cash. It spent \$900 in that year in obtaining the raw material. During the current year it sells the raw material to firm B for \$1000. During this year — whether before or after the sale is not known for the moment — it has to spend \$1000 (instead of \$900) to obtain the same physical amount of raw material that it sells for \$1000.

Several views may be taken of this series of transactions, and there is no universal agreement as to which viewpoint is proper for national income computation.

First, it may be argued that the proper cost to be charged against the sale is the amount paid by S to obtain the particular physical lot of raw material that was sold. This rule assumes that the raw material obtained by S in the two purchases — one last year, the other this year — is not so intermingled that physical identification of the lot sold this year is impracticable. If lot X of raw material was bought last year for \$900, and lot Y was bought this year for \$1000, the sale for \$1000 would give rise to \$100 profit if it was lot X that was sold, and to no profit if the sale was of lot Y. The national income data for the year would thereby be somewhat at the mercy of physical accident.

Second, it may be assumed, without attempting to ascertain the physical facts, that the raw material sold during the current year was the oldest lot in stock at the time the sale took place — “first in, first out.” A profit of \$100 for the current year results. This rule is still the one most commonly used in drawing up the accounts of business concerns, although many industries, particularly in fact those dealing in raw commodities, do not employ it. The national income data in the United States and Great Britain reflect, on the whole, the “first-in first-out” rule, except where a special over-all adjustment is made by the national income analysts on account of “inventory revaluation” (Chapter 6, § 31). During a period of years when prices are rising, firms are buying low and selling high, and rebuying high and selling still higher. If they are to carry the same physical inventory as before, they must spend all of the “profit” that can be traced to the rising price level on replenishing their inventories. This part of the profit, therefore, cannot be declared in dividends without shrinking the business concern physically. When prices turn down, the profit on the sale narrows, then reaches zero, as the concern’s selling price, now going downhill, falls to the level now reached by the still rising first-in costs. Moreover, the inventory purchased at peak prices is marked down, if the rule of “cost or market

whichever is lower" is followed, and this may turn the narrowed profit into a loss. If the price decline continues, with continued inventory mark-down, and little or no excess of sales price above the marked-down inventory cost, a substantial loss will be shown. The first-in first-out method of accounting accentuates recorded profits in a period of rising prices and accentuates recorded losses in a period of falling prices.

Third, it may be assumed instead that the raw material sold during the current year was the lot of raw material most recently purchased by S. "Most recently purchased" would usually mean the latest purchase made before the date of the sale, or date of issuing materials from storeroom to production department. It might be stretched to mean the last purchase of the year, or at least the last purchase not already taken up in the accounts, even though the date of this purchase falls after the date of the sale. In any event, this method, the "last-in first-out" or "lifo" method, tends to allocate to any given sale a cost that is relatively close to the sale price. This result follows because the purchase price of the raw material and the sale price of the finished product tend to move up or down together as the general level of prices changes. In the example above, the \$1000 sale is charged with the cost of \$1000 (at least, if the second purchase by S occurs before the sale), and no profit is shown for the current year. Indeed, under this method of accounting, the accrued but unrealized profit on the \$900 lot (which also could be sold, presumably, for \$1000) will never materialize until the concern liquidates completely. This last-in first-out method of inventory valuation probably has the approval, on principle, of most national income students. They prefer to see the national income data for a given year reflect the value of the physical change in inventory, without including the change in the value of the physical inventory.

41. In practice national income estimators must use the data that the business firms supply, usually for income-tax purposes, and most business firms use the first-in first-out method. Kuznets, taking these figures, adjusts them to what amounts to a "lifo" basis. The United States Department of Commerce, likewise using the data that appear on the firms' books, has attempted no adjustment in computing national income as a total of factor payments.<sup>1</sup> But it does make such

<sup>1</sup> This statement applies only to the unrevised Commerce series. The revised series, published in July, 1947, does include such an adjustment in computing national income as the sum of factor payments. See Appendix B below.

an adjustment in computing net inventory change as one of the steps in computing the national product. This computation actually ends with a total for gross national product, not national income (Chapter 6, § 4). Therefore, the Commerce Department computations have not put inventory changes on a current-price basis in computing national income, but do so in computing gross national product. The reason for this difference in procedure is that lack of information makes the adjustment especially uncertain on an industry-by-industry basis; and the factor payment, profits, is computed on this basis. The British White Paper on national income adjusts only to eliminate write-downs of inventory in periods of falling prices.<sup>1</sup>

42. Kuznets' adjustment is arrived at by "pricing each net change in physical inventory during the year at the price prevailing at the time the net change occurs." It may also be said to be obtained by multiplying "the physical change in stocks of goods during the year by the average weighted price prevailing during the year."<sup>2</sup> The resulting figure is used in place of the inventory change that is shown on the books of the business firms. This corrected figure, of course, still cannot be compared with a similarly corrected figure for a year of generally higher price level. For that purpose, one or the other of the corrected figures must be inflated or deflated. The inventory adjustment itself merely (a) substitutes the price of the commodity which is current at the time of sale of the inventory for a past-period price that first-in first-out accounting practice commonly attaches to units moving out of inventory by sale; and (b) refuses to count the loss that is registered on the books when inventory is marked down under the conservative "cost-or-market-whichever-is-lower" technique.

The magnitude of this adjustment is important in years of rapidly moving prices. In 1920, according to Kuznets, national income is larger by \$4.3 billion if the change in physical inventories is expressed in current prices instead of (except for farms) book values; in 1921, by \$6.6 billion; in 1930, by \$4.2 billion. (Table 23, page 172.)<sup>3</sup>

<sup>1</sup> Milton Gilbert, "U.S. National Income Statistics," *Economic Journal*, April, 1943, p. 80. See also the references at § 31 in Chapter 6. Cf. Tibor Barna, *Redistribution of Incomes through Public Finance in 1937*, Appendix B, and sources there cited.

<sup>2</sup> Solomon Fabricant, "On the Treatment of Corporate Savings in the Measurement of National Income," *Studies in Income and Wealth*, I, 130.

<sup>3</sup> Details are given in Kuznets, *National Income and Its Composition, 1919-1938*, II, 903-10. These figures are revisions of those in Kuznets, "Changing Inventory Valuations and Their Effect on Business Savings and on National Income Produced," *Studies in Income and*

43. It must be recalled that the Kuznets adjustment results in no account being taken of accrued gains or losses on inventory. A firm starts year 1 with \$100 in cash. It buys 100 units at \$1 a unit in year 1. It sells 10 units in year 2 at \$3 a unit and buys 10 units in year 2 at \$3 a unit. At the end of year 2 it holds 100 units that could be sold at \$3, or \$300 altogether, but the balance sheet shows (under the Kuznets adjustment, or under "lifo" accounting) an inventory of \$100. The accrued gain of \$200 is ignored completely. It is taken into account only if a comparison of year 1 with year 2 is undertaken, and is accomplished by inflating all the money figures of year 1 to the level of year 2. Along with consumption and other forms of investment, the net-increase-in-inventory elements must be put on the same price basis for the two years. In current dollars, year 1 shows + \$100; year 2, zero. Since prices in year 2 are three times those in year 1, the inventory increase of year 1 is multiplied by 3, and the two years then compare, in year -2 prices, as follows: \$300 and zero. (In year -1 prices, they compare as follows: \$100 and zero.)

Moreover, not even the price-level adjustment for net increase in inventory will prevent omission of the accrued gain in year 2 of any inventory that was on hand at the start of year 1.

If the problem is to compare, not the national incomes of year 1 and year 2, but the distribution of year -2 national income among various claimants, the \$200 accrued gain is ignored. This practice results in an understatement of the relative gain in economic power of the business firm in question, as compared with others that do not hold property as the price level rises.<sup>1</sup>

44. A rising or falling cost of labor poses the same problem, in principle, as does the changing price level of raw materials in the discussion above. Firm S spent \$100 last year for raw materials, and \$800 for labor, at \$1 an hour, in producing a product that it sells this year for \$1000. This year it has purchased for \$100 another lot of raw material and has produced another lot of finished product. But this year labor has cost \$1.125 an hour, so the production cost of

*Wealth*, I, 152, and the table for 1919-35 in Solomon Fabricant, "On the Treatment of Corporate Savings in the Measurement of National Income," *Studies in Income and Wealth*, I, 131. For a general discussion of the inventory problem, see Kuznets, *Studies*, loc. cit., and discussion by Copeland, Friedman, and Marget, pp. 145-72; Fabricant, *Studies*, loc. cit., pp. 121-22 (cost versus cost or market whichever is lower), and pp. 128-31 (constant-price inventories versus revalued inventories); Harold Barger, *Outlay and Income in the United States, 1921-1938*, Appendix C.

<sup>1</sup> See Arthur W. Marget, in Kuznets, *Studies*, loc. cit., pp. 162-65.

this second lot is \$1000. Shall the sale of the first lot, at \$1000, be charged with the cost of producing the most recent lot? The profit will then be zero, and the balance sheet will show \$900 inventory. The last-in first-out method would thus be extended to assume that not only the last-in materials but also the last-in labor was the first-out. The same question arises with supplies that are consumed but not physically embodied in the product — fuel, for example. Business accounts generally do not apply the “lifo” method to supplies and labor cost, at least not as frequently as they use it for raw materials costing. However, the adjustments by Kuznets and the Commerce Department do, in effect, so extend the “lifo” principle. In practice, it is only the materials element that is important. The time elapsed between the purchase of materials and the issuance of them to the production department, where labor is applied to them, may be long; the time between the application of the labor and the sale of the product is usually short.<sup>1</sup>

#### E. Dividends

**45.** The amount of corporate profit that is paid to individual stockholders in certain types of dividend affects the sub-totals of corporate saving and dividends received by individuals.

A corporation has earned \$100 a share during the current year and is going to pay \$75 to its stockholders as a cash dividend. Before the dividend is declared, the concern's assets include at least \$100 in cash and its surplus is at least \$100. When notice is given of the declaration, the asset side is unchanged, but on the liabilities side \$75 is split away from the surplus and becomes a true liability, owed to the stockholders of record as of a given date, say a month hence. At this moment, the stockholder might think that legally he had obtained a \$75 “income” by this declaration. But he has not; he has a right to the dividend only if he is a stockholder as of the record date, yet to come. When that moment arrives, he becomes legally entitled to the dividend, the actual payment of which will ordinarily take place a few days or weeks later. But the moment that he as an individual becomes legally entitled to the dividend, or, with respect to stocks that are listed on an exchange, upon the date set by the stock exchange authorities for the stock to sell “ex-dividend,” his stock has that much less value than if it were still open to anyone to obtain the

<sup>1</sup> Cf. Dohr and Inghram, *Cost Accounting*, chap. 18, pp. 308–16, and chaps. 19 and 20.

dividend by buying the stock. He obtains a new money type of asset (an individual claim against the company for the dividend) at the cost of a similar decline in the value of another money type of asset (share of stock). Finally, when he receives the dividend check, he gives up one money type of asset for still another, the check, and when he deposits the check or cashes it, he engages in still another exchange of this kind. Nowhere in these exchanges is there anything signifying the production of national income. The corporation, meanwhile, upon paying the dividend, gets rid of a liability by losing an asset (bank deposit; presumably) of equal amount.

46. Dividends can be divided into what will be called here "asset dividends" and "non-asset dividends." The asset dividend is the usual type; when it is paid, assets are removed from the corporation and delivered to the stockholders, as in the illustration immediately above. A non-asset dividend distributes among the stockholders additional shares in the company's stock or bonds, notes, or other evidences of indebtedness of the company. When a non-asset dividend is paid, only the liabilities side of the company's balance sheet is affected. If it is a stock dividend, the amount in question is deducted from the item "surplus" (or "undistributed profits" or something similar), and added to "capital stock," either preferred or common, as the case may be. If it is a dividend in the company's own obligations, a corresponding liabilities item is created and the amount is deducted from "surplus." Upon the passage of the date of record, or the ex-dividend date, the market value of a share of stock experiences a downward pressure, just as when a similar date is reached for an asset dividend. National income remains unaffected, just as under an asset dividend.

It has been found useful to keep a record of asset dividends to individuals in breaking down the national income total, though in doing so some variation in the national income terminology is required. "Saving" is ordinarily defined as income minus consumption expenditure (Chapter 2, § 4). A corporation as such, however, cannot consume (it can only invest, or trade similar assets); and even if it could consume, a dividend payment would clearly not be a consumption expenditure. Corporations are therefore said to have "saved" that part of the year's profits that is not paid in asset dividends to individuals.

The two types of dividend differ, moreover, in their effect on a sub-

sidary term often employed in a national income analysis — “personal income,” or “income payments to individuals.” Regarding any type of asset dividend paid to an individual, the prevailing practice is to count the dividend as an “income payment to individuals,” hence a net addition to “personal income” (and as a subtraction from “corporate saving”). This terminology implies that the drop in the value of the stockholder’s share, as a result of passage through the ex-dividend date, is not a minus entry in his “income,” although it certainly is an offset in computing his net worth. As an extreme case, but one not unknown, especially in recent years, consider a preferred stock with accumulated dividends of \$70 a share, selling in the market for \$160 just before the ex-dividend date for the whole accumulation of back dividends. The next day the stock will sell for \$90, plus or minus the influence of any other factors that have developed overnight. The national income records will show the stockholder’s personal income for the year to be \$70 more than if the back dividends had not been paid off until sometime after the end of the year. Yet the stockholder is no better off if everything else in the example is really kept unchanged, except perhaps for a slight allowance for interest on the deferment of the payment — and perhaps a slight discount for a feeling of uncertainty that the back dividends ever will be paid.

The non-asset dividend does not raise this issue. The total value of the stockholder’s holdings in the company (including any obligations of the company) is left unchanged by the dividend, instead of being decreased. And the dividend is not counted as an “income payment” to him. If a 100 per cent stock dividend is declared, he holds two shares for every one he would be holding otherwise, and each share has just one half the market value the one share would have had, except for an increment in value, often alleged but impossible to verify, that comes from the smaller-unit shares being more readily marketable. (It must be assumed, not to introduce irrelevant complications, that each two shares will have just the same prospects for asset dividends the one share would have had.)

**47.** An asset dividend received by a corporation or by a partnership or proprietorship increases its net income. Since business net income is an element of national income, double counting will occur if both total dividends received and total business net income are included in national income. Consequently, only dividends paid to



individuals may be counted, as with rent (§ 9) and interest (§ 23).

*Statistics of Income* tabulations show the amount of dividends received by the corporations in each industry. These amounts are subtracted from the total of dividends paid and the balance is assumed to go to individuals. This procedure implies that partnerships and proprietorships receive a negligible amount of dividends.

For any one industry, the figure for net dividends is therefore not a total of dividends paid by that industry. It is instead a total of dividends originating in that industry; that is, dividends paid by this industry minus dividends received from other industries (and intra-industry dividends). As with net interest payments, the net dividend payments for any one industry may be negative (Chapter 9, § 11).

#### F. Estimates of Corporate Profits, Dividends, and Saving

48. The estimates of corporate net income are based almost entirely upon the Treasury's annual publication, *Statistics of Income*, which in turn is compiled from all the returns, taxable and non-taxable, of business corporations. Since all profit-seeking corporations, regardless of the amount of their net income or the existence of a net loss, are required to file returns annually unless they have become inactive, and since all corporation returns, not merely a sample, are tabulated, the basic data give practically complete coverage, for there is no indication of an appreciable degree of non-observance of the filing requirements. However, the tabulations prior to the series published by the Department of Commerce in April, 1946,<sup>1</sup> reflected only the returns as they were submitted by the taxpayer, before being audited by the Bureau of Internal Revenue. There is probably in these earlier estimates a systematic error of understatement of corporate profits in the aggregate on this account.<sup>2</sup> The latest Department of Commerce series, shown in Table 14, adds an estimate (based on additional taxes assessed) which makes allowance for this factor.

In contrast to the annual estimates of salaries and wages, rent, and profits of unincorporated concerns, the estimates of corporate net income are probably about as reliable in any one year as in another.

49. Kuznets, Department of Commerce, and the British White

<sup>1</sup> Gardner F. Derrickson, "Trend of Corporate Profits, 1929-45," *Survey of Current Business*, April, 1946, p. 12.

<sup>2</sup> See also Kuznets, *National Income and Its Composition, 1919-1938*, II, 413.

Paper are alike in deducting all taxes on business firms in computing the factor-payment "profit," except that the White Paper does not deduct the corporation income tax. In the forthcoming revision of its national income series, the Commerce Department will also not deduct the corporation income tax. All three are alike again in not deducting personal taxes, notably the personal income tax, whether or not collected at the source, and no matter what the factor payment is — profits, net rent, interest, salaries, or wages. A discussion of the issues raised by this treatment of taxes is deferred to Chapter 7.

50. The distinction between residents, whose income is to be included in the national income, and non-residents, whose income is to be excluded, causes special difficulties in the corporate field. In principle, the aim is to include only profits allocable to residents, whether earned abroad or at home by domestic or foreign corporations. Such allocation, prior to the payment of dividends, is not practicable. Consequently it is not practicable for that part of profits retained after payment of dividends. In the Commerce series, the retained profits item includes only, and all of, the retained profits of corporations located in the United States, whether earned at home or abroad.

That part of profits that is distributed in dividends, on the other hand, is on a residence basis. The national income total includes a dividends-to-individuals item that is an estimate of "the excess of dividends received from abroad over dividends going abroad." Changes in the ownership of shares of stock between the time the profits are earned and the time they are paid out in dividends may therefore alter the allocation of those profits between residents and non-residents.<sup>1</sup>

51. The discussion in §§ 52–54, so far as the Commerce Department data are concerned, is based on the series published in the annual statements of national income up to and including the statement in the *Survey of Current Business* of February, 1947. These data, reproduced in Table 14, are referred to as "Commerce (old series)." A revised series for corporate profits appeared in the *Survey* of April, 1946, but the revised totals of national income of which it is a constituent have not yet been published.<sup>2</sup> The revised series is shown in

<sup>1</sup> See Gardner F. Derrickson, "Trend of Corporate Profits, 1929–45," *Survey of Current Business*, April, 1946, p. 12; and Dwight B. Yntema, "Corporate Profits and National Income," *Survey of Current Business*, September, 1944, p. 10. <sup>2</sup> They are in Appendix B below.

Table 15, and is designated "Commerce (new series)." The profits before taxes in the new series are before both federal and state income taxes instead of before federal income taxes only, as are the profits in Table 14. Moreover, the data in Table 15 are computed without deducting depletion (§ 31), but with an addition for profits discovered after audit (§ 48).<sup>1</sup>

**52.** Corporate profits after all taxes have the distinction of being the only major component of national income to be a minus quantity for some years (Table 14). From \$7.2 billion in 1929 they fell to — \$3.6 billion in 1932, if Commerce Department data are used, which do not adjust the totals for inventory change (§ 41) and depreciation (§ 30) to remove the effects of price changes. Kuznets' data, which make both adjustments, show a less pronounced decline: from \$7.8 billion in 1929 to — \$1.8 billion in 1932. During the nineteen-twenties Kuznets' estimates for annual corporate profits after all taxes fluctuate between \$3 billion and \$7 billion (except for 1929).

During World War II corporate profits (still after all taxes) rose from \$4.2 billion in 1939 to \$8.5 billion in 1941, and reached a peak of \$9.9 billion in 1944. As a percentage of national income, corporate profits just about held their own. In 1939, corporate profits after taxes were 6 per cent of national income; in 1944, 6.2 per cent. Corporate profits before corporate income and excess-profits taxes increased enormously during the war, to \$24 billion in 1943.

**53.** Dividend payments have comprised a minor part of the income payments to individuals in the United States. They rose from \$2.9 billion in 1919 to \$6.3 billion in 1929, or from 4.5 per cent of income payments to individuals to 7 per cent, according to Kuznets.<sup>2</sup> During the depression dividends declined sharply, from \$5.9 billion in 1929 to \$2.2 billion in 1933, according to the Commerce Department estimates. During the latter part of the nineteen-thirties, dividend payments fluctuated around \$4 billion a year. They remained at the \$4 billion level throughout World War II, despite the substantial rise in corporate profits.

<sup>1</sup> The other principal differences between the earlier series and the most recent one are that the latter includes an adjustment for the estimated effect of the speeded-up amortization (depreciation on defense and war facilities) occasioned by the end of the war, and uses income tax rather than Interstate Commerce Commission figures for railroads and pipelines. Derrickson, *op. cit.*, p. 15.

<sup>2</sup> Computed with Kuznets' "aggregate payments to individuals including entrepreneurial savings." Kuznets, *op. cit.*, I, 137, Table 1.

TABLE 14

**Net Income of Incorporated Concerns Before Certain Taxes, and After All Taxes; Dividends Paid to Individuals; and Corporate Saving, 1919-46 (Kuznets and Commerce, old series)**

(in billions of current dollars)

|   | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925             | 1926 | 1927 | 1928 | 1929 | 1930 | 1931 | 1932 |
|---|------|------|------|------|------|------|------------------|------|------|------|------|------|------|------|
| <b>Commerce:</b>  |      |      |      |      |      |      |                  |      |      |      |      |      |      |      |
| Net income before federal income and excess profits taxes <sup>a</sup>  | d    | d    | d    | 4.6  | 6.1  | 5.2  | 7.2              | 7.2  | 6.3  | 8.0  | 8.4  | 2.4  | -1.2 | -3.4 |
| Net income after all taxes <sup>b</sup>                                 | d    | d    | d    | 3.8  | 5.2  | 4.3  | 6.0              | 6.0  | 5.2  | 6.8  | 7.2  | 1.7  | -1.6 | -3.6 |
| Dividends paid to individuals <sup>b</sup>                              | d    | d    | d    | d    | d    | d    | d                | d    | d    | d    | 5.9  | 5.6  | 4.3  | 2.7  |
| Corporate saving <sup>b</sup>   | d    | d    | d    | d    | d    | d    | d                | d    | d    | d    | 1.3  | -3.9 | -5.9 | -6.4 |
| Net income after all taxes as per cent of national income               | d    | d    | d    | d    | d    | d    | d                | d    | d    | d    | 8.6  | 2.5  | -3.0 | -9.1 |
| <b>Kuznets:</b>   |      |      |      |      |      |      |                  |      |      |      |      |      |      |      |
| Net income before all taxes <sup>g</sup>                                | 6.9  | 8.2  | 5.8  | 5.5  | 7.4  | 6.7  | 6.4 <sup>h</sup> | 10.1 | 8.8  | 9.7  | 11.2 | 8.3  | 4.2  | 0.6  |
| Net income after all taxes <sup>c</sup>                                 | 3.9  | 5.4  | 3.7  | 3.2  | 4.8  | 4.2  | 5.2              | 7.0  | 5.7  | 6.4  | 7.8  | 5.4  | 1.5  | -1.8 |
| Dividends paid to individuals <sup>af</sup>                             | 2.9  | 3.2  | 3.0  | 3.0  | 3.8  | 3.8  | 4.4              | 4.7  | 5.1  | 5.5  | 6.3  | 6.0  | 4.6  | 3.0  |
| Corporate saving <sup>c</sup>   | 1.0  | 2.2  | 0.7  | 0.2  | 1.0  | 0.4  | 0.8              | 2.3  | 0.6  | 0.9  | 1.5  | -0.7 | -3.1 | -4.8 |
| Net income after all taxes as per cent of national income <sup>af</sup> | 6.1  | 7.3  | 6.2  | 5.4  | 6.8  | 5.9  | 6.9              | 8.6  | 7.0  | 7.8  | 9.0  | 6.9  | 2.6  | -4.1 |

|  | 1933 | 1934             | 1935 | 1936 | 1937 | 1938 | 1939 | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 |
|--|------|------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Commerce:  |      |                  |      |      |      |      |      |      |      |      |      |      |      |      |
| Net income before federal income and excess profits taxes <sup>a</sup> | -0.2 | 1.1              | 2.4  | 5.0  | 5.2  | 2.5  | 5.5  | 8.4  | 15.7 | 19.9 | 23.7 |      |      |      |
| Net income after all taxes <sup>b</sup>                                | -0.6 | 0.5              | 1.7  | 3.8  | 3.9  | 1.7  | 4.2  | 5.8  | 8.5  | 8.7  | 9.8  | 9.9  | 9.0  | 12.0 |
| Dividends paid to individuals <sup>b</sup>                             | 2.2  | 2.7              | 2.9  | 4.7  | 4.7  | 3.2  | 3.8  | 4.0  | 4.5  | 4.3  | 4.3  | 4.5  | 4.5  | 5.1  |
| Corporate saving <sup>b</sup>  | -2.8 | -2.2             | -1.3 | -0.9 | -0.8 | -1.5 | 0.4  | 1.8  | 4.0  | 4.4  | 5.5  | 5.4  | 4.5  | 6.9  |
| Net income after all taxes as per cent of national income              | -1.5 | 1.1              | 3.0  | 5.8  | 5.5  | 2.6  | 6.0  | 7.5  | 8.8  | 7.1  | 6.6  | 6.2  | 6.1  | 7.3  |
| Kuznets:   |      |                  |      |      |      |      |      |      |      |      |      |      |      |      |
| Net income before all taxes <sup>g</sup>                               | 1.0  | 2.4              | 5.0  | 8.2  | 8.4  |      |      |      |      |      |      |      |      |      |
| Net income after all taxes <sup>c</sup>                                | -1.5 | -0.3             | 1.7  | 4.1  | 3.5  | 2.2  |      |      |      |      |      |      |      |      |
| Dividends paid to individuals <sup>d</sup>                             | 2.5  | 3.0 <sup>e</sup> | 3.8  | 4.8  | 4.9  | 3.5  |      |      |      |      |      |      |      |      |
| Corporate saving <sup>e</sup>  | -4.0 | -3.3             | -2.1 | -0.7 | -1.4 | -0.7 |      |      |      |      |      |      |      |      |
| Net income after all taxes as per cent of national income <sup>f</sup> | -3.6 | -0.5             | 3.0  | 6.6  | 5.0  | 4.2  |      |      |      |      |      |      |      |      |

<sup>a</sup> For 1922-28: Dwight B. Yntema, "Corporate Profits and National Income," *Survey of Current Business*, September, 1944, Table 2, p. 12. For 1929-43: Milton Gilbert and George Jaszi, "National Income and National Product in 1943," *Survey of Current Business*, April, 1944, Table 15, p. 15. For 1944 and 1945 estimates on a different basis, see Table 15 below. For 1929-43 the Yntema series is the same in 1931-33 and is either \$0.1 billion or \$0.2 billion higher in each of the other years. The Yntema series includes an adjustment to put inventories on a current-price basis for manufacturing only (Yntema, *loc. cit.*, p. 10) and does not correct for international flow of dividends. In both series capital gains and losses are eliminated so far as possible, but depreciation is not adjusted to a replacement cost basis.

<sup>b</sup> For 1922-28, Yntema, *loc. cit.* For 1929-40, Gilbert and Jaszi, *loc. cit.* For 1941-46, *Survey of Current Business*, February, 1946, Table 7, p. 8, and February, 1947, Table 4, p. 8, and Table 3, p. 7.

<sup>c</sup> Kuznets, *National Income and Its Composition, 1919-1938*, I, Table 22, p. 216.

<sup>d</sup> Kuznets' data in his Table 54 include two estimates for this year. Kuznets, *op. cit.*, II, 396-99.

<sup>e</sup> Includes balance of international payments. Cf. Kuznets, *op. cit.*, I, Table 54.

<sup>f</sup> Computed from Kuznets, *op. cit.*, II, 900, Table VI, by deducting from total taxes the taxes paid by agriculture, and adding the balance to net income after all taxes.

<sup>g</sup> For 1925, net income before deducting federal taxes only.

TABLE 15

**Sales of Incorporated Concerns; Net Income Before and After Federal and State Income and Excess Profits Taxes;  
Dividends Paid to Individuals; and Corporate Saving, 1929-45 (Commerce, new series)<sup>a</sup>**

(in billions of current dollars)

|   | 1929  | 1930  | 1931 | 1932 | 1933 | 1934 | 1935  | 1936  | 1937  | 1938  | 1939  | 1940  | 1941  | 1942  | 1943  | 1944  | 1945  |
|---|-------|-------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Sales <sup>b</sup>  | 138.6 | 118.3 | 92.4 | 69.2 | 73.0 | 89.6 | 102.0 | 119.5 | 128.9 | 108.6 | 120.8 | 135.2 | 176.2 | 203.0 | 233.5 | 247.7 | 240.1 |
| Profits before federal and state income and excess profits taxes <sup>c</sup> | 9.8   | 3.2   | -0.8 | -3.1 | 0.1  | 1.6  | 3.1   | 5.6   | 6.1   | 3.2   | 6.4   | 9.2   | 17.0  | 21.0  | 24.9  | 24.1  | 20.9  |
| Federal and state income and excess profits taxes                             | 1.4   | 0.9   | 0.5  | 0.4  | 0.5  | 0.8  | 1.0   | 1.4   | 1.6   | 1.1   | 1.5   | 2.9   | 7.9   | 11.8  | 15.0  | 14.3  | 11.8  |
| Profits after taxes <sup>c</sup>  | 8.3   | 2.3   | -1.4 | -3.5 | -0.4 | 0.9  | 2.2   | 4.2   | 4.6   | 2.1   | 4.9   | 6.2   | 9.1   | 9.2   | 9.9   | 9.8   | 9.1   |
| Dividend payments to individuals <sup>d</sup>                                 | 5.8   | 5.5   | 4.1  | 2.5  | 2.0  | 2.6  | 2.8   | 4.5   | 4.6   | 3.0   | 3.7   | 4.0   | 4.4   | 4.2   | 4.3   | 4.5   | 4.5   |
| Corporate saving  | 2.6   | -3.1  | -5.4 | -6.0 | -2.5 | -1.7 | -0.6  | -0.4  | -0.1  | -1.0  | 1.1   | 2.3   | 4.8   | 5.0   | 5.7   | 5.3   | 4.5   |

<sup>a</sup> Gardner F. Derricks, "Trend of Corporate Profits, 1929-45," *Survey of Current Business*, April, 1946, Tables 4, 5, 6, 7, 8, and 10. The tables present data broken down by industries.

<sup>b</sup> Excludes industrial divisions of finance, insurance, and real estate.

<sup>c</sup> Includes net dividends from abroad. This item varies from a maximum of \$136 million to a minimum of \$-46 million.

<sup>d</sup> Strictly, to all non-corporate stockholders: "net dividends."

54. Corporate profit minus dividends, or "corporate saving" (§ 46), was positive during each of the years 1919–29. During each of the years 1930–38 it was negative; corporations in the aggregate each year paid out more than they earned. In 1932, even Kuznets, who estimates profits after adjusting for decline in inventory values (§ 41), reports corporations as paying out \$3 billion dividends, although they suffered a loss of almost \$2 billion — an aggregate dissaving of nearly \$5 billion. The Department of Commerce shows \$6 billion dissaving in 1932 (new series) or \$6.4 billion (old series). Even more significant are the totals for the twenty-year period 1919–38: the \$12 billion net corporate saving of the first half (1919–29) of the period was far overbalanced by the \$21 billion dissaving of the years 1930–38 (Kuznets, and Commerce [new series]).<sup>1</sup> For the twenty years as a whole, corporations in the aggregate paid out in dividends \$9 billion more than they earned. The Commerce Department estimates (old series) show an even larger corporate dissaving for the period 1930–38: \$26 billion.

These findings run contrary to the widespread impression that the corporate sector of the economy is one of the chief sources of saving. Individuals, not corporations, did whatever net saving was accomplished over that period for the economy as a whole, in addition to making up for the corporations' dissaving.

Much of the corporate dissaving — perhaps most of it — does not reflect the payment of dividends by any one corporation in excess of its net income. If one corporation shows a loss but pays no dividends, while another shows a profit and pays part of it in dividends, the former corporation's dissaving may outweigh the latter's saving.

Part of the corporate loss, and hence part of the corporate dissaving, in 1930–38 may represent a writing-down of asset values due to the decline in the level of prices. This may be so, despite the inventory and depreciation adjustments made in Kuznets' series. To this extent the total dissaving estimate would be reduced if the data for each year were strictly in terms of the year's average price. But any such adjusted figure of dissaving for a year in the nineteen-thirties, when the price level was low, must be adjusted upward if it is to be combined with a similar estimate for any one year of the nineteen-twenties, when the price level was high. All in all, it seems unlikely

<sup>1</sup> By a coincidence, the corporate dissaving total for 1930–38 comes out the same in the Kuznets and Commerce (new) series, though for each separate year the two series disagree.

that the estimated \$9 billion corporate dissaving for the twenty-year period exaggerates the real dissaving.

## VI. PROFITS OF UNINCORPORATED ENTERPRISES

55. The estimate of net income of unincorporated enterprises probably contains a larger percentage of error than that for any of the other factor payments. Most of the total of unincorporated profits comes from agriculture, wholesale and retail trade, and professional, non-domestic service. In some of these lines of business, censuses comparable to the *Census of Manufactures* were first attempted only in the nineteen-thirties. The first census of trade and the first census of contract construction were taken in 1930, covering data for 1929. Moreover, the enumerators in the trade and service censuses have not been granted legal power to compel the giving of information, as they are under the *Census of Manufactures*, for example. In some lines of business no census at all has ever been attempted. Finally, sole proprietorships are not required, as corporations are, to file an ordinary income-tax return regardless of size of net income. All partnerships must file returns, but these are for information only, to check on the personal returns filed by the partners, and *Statistics of Income* does not contain a regular series of compilations from partnership returns.

Even for the year and industry where a census exists, profits of unincorporated enterprises must be estimated roughly, for the censuses do not collect information on profits. The profits have usually been estimated from the census data by ascertaining ratios of profits to gross income, or profits per owner, in a sample of concerns in a given industry and applying the results to the gross income or total number of owners in the industry. "In agriculture alone is the net income of entrepreneurs obtained directly by subtracting current expenses from current gross income."<sup>1</sup> An average ratio for corporations in construction and trade, obtained from *Statistics of Income*, was used by Kuznets to estimate net income of the unincorporated enterprises in these fields. In the service industries, he usually multiplied the number of entrepreneurs reported by the *Census of Population* by assumed average net income as derived from sample studies. And in some industries it was necessary to multiply the number of entrepreneurs by average net incomes reported in other but somewhat

<sup>1</sup> Kuznets, *op. cit.*, II, 414. See also Hoffenberg, *op. cit.*, p. 116.



similar industries, direct data not being available.<sup>1</sup> In recent years the Commerce Department has constructed estimates of net income in the professions from information obtained by large-scale questionnaire surveys.

Finally, for those industries where censuses have been taken at intervals, estimates for the intervening years have had to be constructed by interpolations between estimates for two census years, or by extrapolation from the estimate of one census year.<sup>2</sup> It is evident that these intercensal estimates based on estimates can be appreciably, if not substantially, in error despite the most painstaking care in computation.

**56.** The net incomes of partnerships and sole proprietorships — that is, of all unincorporated business enterprises, including farms — account for a substantial proportion of the national income. The total fluctuates widely with business conditions. Total unincorporated net income (“entrepreneurial net income,” in Kuznets’ terminology), before subtracting personal income tax paid on such income, was about \$14 billion a year in the latter half of the nineteen-twenties. It fell slightly below \$5 billion in 1932, then recovered to \$12 billion in 1937 (Commerce). Agriculture accounted for about two fifths of the total except in the depth of depression, when it fell to one third. Trade accounted for another fifth, approximately, and personal services for somewhat more than a fourth.<sup>3</sup>

During World War II, the net income of unincorporated concerns rose sharply. The Commerce series for “net income of proprietors,” which is slightly below Kuznets’ total for “entrepreneurial net income” in almost every year during 1929–38, increased from \$12 billion in 1940 to \$24.1 billion in 1944. These figures also represent incomes before deducting personal income taxes. Agriculture more than maintained its proportionate share; in 1944 it supplied almost one half of this net income.

In comparing these totals with corporate profits, it must be recalled that unincorporated concerns, as such, pay no income tax. The partners or sole proprietors enter in their personal income-tax returns their share in the year’s profits, whether or not distributed. The excess-profits tax of the war years (1940–44) did not apply to unincorporated concerns or their owners.

<sup>1</sup> Kuznets, *op. cit.*, I, 104–14. See also United States Department of Commerce, *National Income in the United States, 1929–35*, pp. 50–53.

<sup>2</sup> Kuznets, *op. cit.*, I, 124–28; II, 479–500.

<sup>3</sup> *Ibid.*, pp. 336–37.

TABLE 16

**Net Income of Unincorporated Enterprises (Partnerships and  
Sole Proprietorships, Including Professional Men and Firms),  
United States, 1919-46 (Kuznets and Commerce)**

(in billions of current dollars)

| Year | All Unincorporated Enterprises |                        |                             |           | Agricultural Enterprises |                        |                             |           | Non-Agricultural Enterprises |                        |                             |           |
|------|--------------------------------|------------------------|-----------------------------|-----------|--------------------------|------------------------|-----------------------------|-----------|------------------------------|------------------------|-----------------------------|-----------|
|      | Absolute Amount                |                        | Per Cent of National Income |           | Absolute Amount          |                        | Per Cent of National Income |           | Absolute Amount              |                        | Per Cent of National Income |           |
|      | Kuz-nets <sup>a</sup>          | Com-merce <sup>b</sup> | Kuz-nets                    | Com-merce | Kuz-nets <sup>c</sup>    | Com-merce <sup>b</sup> | Kuz-nets                    | Com-merce | Kuz-nets <sup>d</sup>        | Com-merce <sup>b</sup> | Kuz-nets                    | Com-merce |
| 1919 | \$17.3                         |                        | 26.9                        |           | \$9.0                    |                        | 14.0                        |           | \$8.3                        |                        | 12.9                        |           |
| 1920 | 15.1                           |                        | 20.4                        |           | 6.9                      |                        | 9.3                         |           | 8.2                          |                        | 11.1                        |           |
| 1921 | 10.9                           |                        | 18.4                        |           | 3.9                      |                        | 6.6                         |           | 7.0                          |                        | 11.8                        |           |
| 1922 | 10.7                           |                        | 17.6                        |           | 4.2                      |                        | 6.9                         |           | 6.5                          |                        | 10.7                        |           |
| 1923 | 12.5                           |                        | 17.5                        |           | 5.0                      |                        | 7.0                         |           | 7.5                          |                        | 10.5                        |           |
| 1924 | 12.8                           |                        | 17.7                        |           | 5.4                      |                        | 7.5                         |           | 7.4                          |                        | 10.3                        |           |
| 1925 | 14.1                           |                        | 18.6                        |           | 6.2                      |                        | 8.2                         |           | 7.9                          |                        | 10.4                        |           |
| 1926 | 14.6                           |                        | 17.9                        |           | 5.7                      |                        | 7.0                         |           | 8.9                          |                        | 10.9                        |           |
| 1927 | 13.7                           |                        | 17.1                        |           | 5.7                      |                        | 7.1                         |           | 8.0                          |                        | 10.0                        |           |
| 1928 | 13.8                           |                        | 16.9                        |           | 5.6                      |                        | 6.9                         |           | 8.2                          |                        | 10.0                        |           |
| 1929 | 14.5                           | \$13.6                 | 16.6                        | 16.4      | 6.0                      | \$5.2                  | 6.9                         | 6.2       | 8.5                          | \$8.5                  | 9.7                         | 10.1      |
| 1930 | 12.2                           | 10.0                   | 15.7                        | 14.5      | 4.2                      | 3.8                    | 5.4                         | 5.5       | 8.0                          | 6.3                    | 10.3                        | 9.1       |
| 1931 | 9.2                            | 7.3                    | 15.3                        | 13.3      | 2.8                      | 2.4                    | 4.6                         | 4.4       | 6.4                          | 4.8                    | 10.6                        | 8.9       |
| 1932 | 6.2                            | 4.8                    | 14.5                        | 12.1      | 1.8                      | 1.5                    | 4.2                         | 3.7       | 4.4                          | 3.4                    | 10.3                        | 8.4       |
| 1933 | 6.6                            | 6.5                    | 15.6                        | 15.5      | 2.7                      | 2.2                    | 6.4                         | 5.3       | 3.9                          | 4.3                    | 9.2                         | 10.2      |
| 1934 | 8.8                            | 7.5                    | 17.7                        | 15.2      | 3.8                      | 2.7                    | 7.7                         | 5.4       | 5.0                          | 4.9                    | 10.1                        | 9.8       |
| 1935 | 9.7                            | 9.5                    | 17.9                        | 17.0      | 4.4                      | 4.1                    | 8.1                         | 7.3       | 5.3                          | 5.4                    | 9.7                         | 9.7       |
| 1936 | 11.3                           | 10.9                   | 18.0                        | 16.7      | 5.1                      | 4.4                    | 8.1                         | 6.8       | 6.2                          | 6.5                    | 9.9                         | 10.0      |
| 1937 | 11.6                           | 11.9                   | 16.5                        | 16.7      | 5.2                      | 5.1                    | 7.4                         | 7.1       | 6.4                          | 6.8                    | 9.1                         | 9.6       |
| 1938 | 11.4                           | 10.1                   | 17.4                        | 15.8      | 4.4                      | 4.0                    | 6.7                         | 6.3       | 7.0                          | 6.1                    | 10.7                        | 9.5       |
| 1939 |                                | 11.2                   |                             | 15.7      |                          | 4.3                    |                             | 6.1       |                              | 6.9                    |                             | 9.7       |
| 1940 |                                | 12.0                   |                             | 15.5      |                          | 4.4                    |                             | 5.6       |                              | 7.6                    |                             | 9.8       |
| 1941 |                                | 15.8                   |                             | 16.4      |                          | 6.3                    |                             | 6.5       |                              | 9.6                    |                             | 9.9       |
| 1942 |                                | 20.6                   |                             | 16.9      |                          | 9.7                    |                             | 7.9       |                              | 10.9                   |                             | 8.9       |
| 1943 |                                | 23.5                   |                             | 15.7      |                          | 11.9                   |                             | 8.0       |                              | 11.6                   |                             | 7.8       |
| 1944 |                                | 24.1                   |                             | 15.0      |                          | 11.8                   |                             | 7.3       |                              | 12.3                   |                             | 7.7       |
| 1945 |                                | 25.6                   |                             | 15.9      |                          | 12.5                   |                             | 7.8       |                              | 13.1                   |                             | 8.1       |
| 1946 |                                | 30.2                   |                             | 18.3      |                          | 14.9                   |                             | 9.0       |                              | 15.3                   |                             | 9.3       |

<sup>a</sup> Derived from Kuznets, *National Income and Its Composition, 1919-1938*, I, 216, Table 22. Includes adjustments to remove capital gains and losses, inventory revaluations, and effect of using cost basis for depreciation.

<sup>b</sup> For 1941-46, *Survey of Current Business*, February, 1946, Table 7, p. 8 and February, 1947, Table 4, p. 8; for 1929-40, *ibid.*, April, 1944, Table 15, p. 15.

<sup>c</sup> Kuznets, *op. cit.*, II, 544, Table A2. <sup>d</sup> By subtraction.

The annual fluctuations of the net income of unincorporated enterprises have closely paralleled those of the national income as a whole. The net income of unincorporated concerns, when expressed as a percentage of the total national income, varied only between 15 and 19 per cent in all of the years 1921-38 (Kuznets) or between 12 and 17 per cent during 1929-40 (Commerce). Still more intriguing is the almost exactly proportionate expansion during World War II. The net income of proprietors was 16 per cent of the national income in 1938 (Commerce) and during the war years it fluctuated in the 15-17 per cent range:

|      |             |      |             |
|------|-------------|------|-------------|
| 1940 | 15 per cent | 1943 | 16 per cent |
| 1941 | 16 " "      | 1944 | 15 " "      |
| 1942 | 17 " "      | 1945 | 16 " "      |

These nearly uniform percentages mask a much greater rise in the net income of farm proprietors and a smaller rise for others.<sup>1</sup>

## VII. PROFITS OF GOVERNMENT

57. Kuznets — but not the Commerce Department or the British White Paper — includes in computing the total of national income an item for government "profit" or "loss," which he calls "net saving." This item covers not only business enterprises operated by the government, like an electric power plant, but government operations as a whole. The government makes a profit and thus creates national income (in addition to the wages it pays out) if it takes in more in taxes than it spends; and it suffers a loss (a partial offset to the national income it creates through paying out wages) if it incurs a deficit. The government is viewed by Kuznets as a gigantic business corporation, "selling" its services for tax revenue. And, as with a business concern, some of the outlay may be capitalized, thus removing it from the expenditures total that is used to compute the year's profit or loss. Construction is the only government expenditure that Kuznets capitalizes.<sup>2</sup> Hence, if a government spends \$100 on constructing a courthouse, \$700 on salaries, supplies, interest, and the like, and collects taxes of \$740, it shows a "profit" of \$40, which is included in national income along with the \$700 and \$100 (assuming

<sup>1</sup> For comments and more details, see Milton Gilbert and George Jaszi, "National Income and National Product in 1942," *Survey of Current Business*, March, 1943, p. 16.

<sup>2</sup> Kuznets, *National Income and Its Composition, 1919-1938*, I, 217.

these two amounts reflect factor activity during the year). If tax collections are only \$620, the government's "loss" is \$80, and national income is only \$720. Kuznets' treatment of government "profit" and "loss" is discussed further in Chapter 7, § 38, and Chapter 8, §§ 7, 8. His estimates of net saving by the federal, state, and local governments are given in Table 17.

TABLE 17  
Profit or Loss (Saving or Dissaving) by Governments, United States, 1919-38 (Kuznets)<sup>a</sup>

(in billions of current dollars)

| 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 |
|------|------|------|------|------|------|------|------|------|------|
| -1.3 | 1.9  | 0.96 | 0.85 | 1.6  | 1.7  | 1.6  | 2.2  | 2.3  | 1.9  |

| 1929 | 1930 | 1931 | 1932  | 1933  | 1934  | 1935 | 1936 | 1937 | 1938  |
|------|------|------|-------|-------|-------|------|------|------|-------|
| 2.2  | 2.1  | 0.34 | -0.91 | -0.11 | -0.58 | -1.7 | -2.2 | 0.50 | -0.10 |

<sup>a</sup> *National Income and Its Composition, 1919-1938, I, 216, Table 22.*

#### VIII. PROPERTY INCOME RECEIVED BY FINANCIAL INTERMEDIARIES

**58.** The receipt of dividends, interest, and net rents by banks, insurance companies, investment trusts, and other financial intermediaries gives rise to several problems in national income accounting. The total of national income may be affected by the method of computation adopted. And even if it remains the same, the division of the total between interest paid to individuals, net rent paid to individuals, and dividends paid to individuals will depend on the method selected. So, too, will the amount of income shown as originating in the banking industry (or the insurance or investment industries) compared with the income originating in manufacturing and other industries. All three possibilities are best appreciated by considering a bank.

**59.** A bank renders certain services, free of charge, to a particular group: its depositors. The services consist largely of investing the depositors' funds, handling currency, clearing checks, and posting accounts. The bank is enabled to supply these services because the depositors commit funds to it without requiring an interest return. The bank invests the deposits and uses the dividend, interest, and other

property income to pay the wages of the bank clerks and other employees who render the free services. It may also impose service charges, but such charges cover only part of the expenses.

This method of stating what the bank does is literally true of a savings bank, with respect to that part of its property income that it does not pass on to its depositors as interest. The statement is not literally true for a commercial banking system, but it is true in the sense required for the present analysis. The commercial banking system may create deposits out of nothing for some of its customers who are at once borrowers from the bank and holders of "deposits" in it. These depositors pay the bank interest as its debtors. Hence the banking system does not invest money that such depositors bring to it (unless from abroad). Still, the essential fact for present purposes is evident: the depositors individually have money (deposits) on which they are content to receive no interest, and the bank has an equivalent volume of representative intangible assets (notes, bonds, and the like) on which it does receive interest.

The bank does not in fact give its services away free of charge, all things considered. The situation is as if the depositors invested their funds themselves, collected as individual investors the dividends, interest, and rent, and then spent this income in buying from the bank at stipulated prices the services of investment advice, check-clearing, handling currency, and so on. This money process is eliminated by giving the bank custody of the funds and use of the investment income.

As in any case where a money process is eliminated, there is danger of understatement of the national income. In the present instance, the understatement would occur through the use of the general rule concerning interest, a rule devised to prevent double counting (§ 23). In fact, as will be noted in § 61, application of this rule to banks and certain other financial intermediaries has been avoided, but it has been avoided indirectly and, until recently, without a full statement of the issues involved. Therefore it is worth noting what the national income accounts would show if the general rule concerning interest were applied to a bank.

A bank receives \$100 in interest from industry M, pays its clerks \$70, its depositors \$20 in interest, and its stockholders \$10 in dividends. All of its depositors are individuals, not business firms. The bank's factor payments, under the general rule, would be: wages, \$70;

profits, \$10; interest paid, - \$80. This last item would be negative because, under the general rule, interest received (\$100) is subtracted from interest paid (\$20). The result would clearly be unreasonable. The banking industry would be pictured as producing zero national income ( $\$70 + \$10 - \$80$ ). Moreover, the total national income would be understated. The bank's free services to its depositors are final products, since the depositors are individual consumers. But the national income total would include no factor payments for producing that product, since nothing was paid to the bank for it.

To the extent that the depositors were business firms, not consumers, the total national income would not be understated. The bank's services would not be consumer goods. The failure to credit the bank with the creation of any national income would be offset by an overstatement of the national income created by the bank's business-firm depositors. Their profits would be overstated. They would be recorded as paying nothing for a service that they did in fact use in producing their products.

60. The understatement of national income in the example immediately above can be avoided if there is imputed to the depositors \$80 in interest, to be added to the \$20 they actually receive, thus accounting for all of the \$100 of interest, and if the depositors may in turn be considered as spending this \$80 imputed income in purchasing the services the bank renders them. The general rule on interest, and the similar rule on dividends, can then be safely applied. The bank's factor payments are now: wages, \$70; profits, \$10; interest paid, zero (imputed interest paid, \$80, plus interest actually paid, \$20, minus interest received, \$100). The Department of Commerce has recently developed, and decided to adopt, this method. The amount of interest imputed to depositors will be taken as the difference between what the bank receives as interest and dividend income and what it actually pays out as interest to its depositors. The imputed interest will be allocated among business firms, governmental units, and individuals.

61. The method used by Kuznets and the Department of Commerce up to the present, for banks and life insurance companies, has treated those organizations as aggregates of individuals, not as business firms, with respect to interest received on long-term bonds. Such interest is thus assumed to be received by individuals, not by the bank as a business firm, or by the insurance company as a business

firm. Consequently, in computing the total of factor payments made by a bank as a business firm, no subtraction is made for "long-term bond interest received."

All interest on short-term loans received by the bank, however, is considered to be received by it as a business firm, and not in its capacity as an "aggregate of individuals." Being received by a business firm, it would be subtracted, under the usual rule to avoid double counting, in computing the interest paid by the bank. But a series of short cuts in computation have been employed instead. In computing the bank's factor payments, none of the interest paid by the bank is included, and no subtraction is made for short-term interest received by the bank. And in computing the factor payments made by those who pay the short-term interest to the bank, the payment of this interest is not included, the assumption being that all such payments represent, not factor payments, but merely the purchase of credit, analogous to the purchase of raw materials or supplies.

In the example in § 59, where M's obligation is a long-term bond, the \$100 interest is included in computing interest received by individuals. And in computing the bank's factor payments, there is no interest-received item, and no interest-paid item; the factor payments are wages, \$70, and profits, \$10. If M's obligation is a short-term debt to the bank, it is not counted in computing factor payments made by M, and it is ignored in the bank's factor payments, which remain wages, \$70, and profits, \$10. The national income total would be \$100 smaller because the interest was on a short-term loan. The result under this short-cut method gives a correct total for national income (correct, in terms of the imputed-income method) only if short-term interest happens to equal income imputed on deposits held by business firms. The "aggregate of individuals" method may thus produce either an understatement or an overstatement of national income.<sup>1</sup>

The effects of the three different methods described in §§ 59-61 on the division of national income between interest, profits, and rent, and among industries, can be better appreciated after some of the general problems of allocation by industry are discussed (Chapter 9, §§ 10-15).

<sup>1</sup> For details, and analysis applicable to other financial intermediaries (investment companies, for example), see Dwight B. Yntema, "National Income Originating in Financial Intermediaries," *Studies in Income and Wealth*, X, pp. 1-25 — 1-58 (mimeograph,) and comment by others.

## IX. TERRITORIAL SCOPE: RESIDENTS AND NON-RESIDENTS

**62.** The factor payments counted in the national income are those paid to residents of the country, whether aliens or citizens, regardless of whether the work was done or the property was located at home or abroad. "The United States," for this purpose, consists of the continental United States; that is, the forty-eight states and the District of Columbia. However, there are qualifications to these statements. The total for net rent is actually for net rent originating in the United States rather than the net rent received by its residents, but the difference is presumably unimportant. Net corporate savings reflects the undistributed profits of those corporations whose principal place of business or principal office or agency is located in the United States (in this case, including Alaska and Hawaii), even though some of the plant may be located elsewhere, and regardless of the residence of the stockholders.

The estimates of dividends and interest paid to individuals are adjusted to include payments from abroad and to exclude payments made by corporations located in the United States to residents abroad. But the adjustment is made from the Commerce Department study of the balance of international payments, and these data include Alaska, Hawaii, Puerto Rico, and the Virgin Islands in the "United States" area.<sup>1</sup>

## X. FACTOR PAYMENTS OMITTED FOR LACK OF DATA

**63.** The amounts that are omitted from the Commerce Department and Kuznets tabulations of factor payments because of lack of data are, of course, not known; but when the omissions are broken down into sub-types, some rough estimates can be given. The areas of omission are being lessened year by year as research continues, but the list given by Kuznets as of 1938 is still largely correct today (1947), except as indicated in footnotes.

(a) "Pensions, compensation for injuries, and direct compensation in kind are covered for only a few industries. Other forms of compensation . . . are not covered at all: expense accounts, stipends for additional training, lower prices on the products of the employing or related enterprises, and other benefits derived from employers."<sup>2</sup>

<sup>1</sup> Kuznets, *op. cit.*, I, 117-18. (See § 50 above.)

<sup>2</sup> *Ibid.*, II, 420-21. The new series of the Department of Commerce has complete coverage of pensions, compensation for injuries, and direct compensation in kind.



Kuznets estimates that the shortage for compensation of employees may be more than a billion dollars for a year like 1929.<sup>1</sup>

(b) Entrepreneurial income from lodgers and boarders — possibly from half a billion to a billion dollars.<sup>2</sup>

(c) Urban poultry and gardens and cow-keeping — possibly a quarter of a billion dollars in 1929.<sup>3</sup>

(d) Income from odd jobs and activities: newspaper vending and bootblackening by boys, occasional paid lectures by professors or statesmen, attendance at meetings of boards of directors, and so on — possibly half a billion dollars.

“To sum up: total income from the items omitted under service income from enterprises, partly domestic, [items (a) to (d) above] may, in a year like 1929, have amounted to not much less than \$3 billion, and perhaps appreciably more.”<sup>4</sup>

(e) Royalties, in large part, but the total omitted probably does not exceed \$100 million to \$300 million.<sup>5</sup>

(f) Payments that were deducted in computing the net income of the payor but that were not included in the income of the payee. The most conspicuous case is probably that of contributions by corporations to non-profit organizations in so far as these contributions cannot really be considered an expense of doing business, but are instead to be regarded as a distribution out of the net income produced by the business.<sup>6</sup>

(g) Services of housewives and other members of the family — possibly \$20 billion or more in 1929, for housewives alone.<sup>7</sup>

(h) Imputed net income from the ownership by individuals of automobiles, furniture, and other durable goods — possibly half a billion dollars or less.<sup>8</sup>

<sup>1</sup> *Ibid.*, p. 421.

<sup>2</sup> *Idem.* The new series of the Department of Commerce includes entrepreneurial income of boarding- and lodging-house keepers, but not income from the incidental letting of rooms.

<sup>3</sup> *Ibid.*, p. 422.

<sup>4</sup> *Ibid.*, p. 423. Service income is here understood as all non-property income. The new series of the Department of Commerce includes directors' fees.

<sup>5</sup> *Ibid.*, p. 425.

<sup>6</sup> *Ibid.*, pp. 430–31. This particular case is treated as a private “transfer payment” in the new series of the Department of Commerce on “personal income.”

<sup>7</sup> *Ibid.*, pp. 431–33. Kuznets doubts whether this item should be included, even apart from the lack of data. See Chapter 1, § 23.

<sup>8</sup> Donald B. Marsh, “The Taxation of Imputed Income,” *Political Science Quarterly*, December, 1943, pp. 524–25. Kuznets, *op. cit.*, II, 434, cites a 1926–27 estimate by W. I. King of \$3 billion, but this seems to be clearly too large for *net* imputed income from these sources.

# 6

## National Income as Net Product

### I. THE "FINAL PRODUCT" CONCEPT

1. The national income may be expressed as the total of the various kinds of final product produced during the period (Chapter 1, § 1):

- (a) goods and services purchased by consumers;
- (b) net addition to business inventories;
- (c) net increase in other business assets (not counting money and money claims), chiefly depreciable and depletable assets;
- (d) net increase in claims against non-residents;
- (e) goods and services purchased by government.<sup>1</sup>

#### A. Avoiding Double Counting

2. Purchases themselves are not acts of production; hence it may be asked why they are included in computing the national income from the product side. To include them need not, however, lead to an overstatement of the national income. Any single purchase is in effect a purchase of two elements. One element is the personal service rendered by the seller at the time of sale; for example, the

<sup>1</sup> For the particular purposes that may be served by examining national income from the product side, see Clark Warburton, "Accounting Methodology in the Measurement of National Income," *Studies in Income and Wealth*, I, 72-74. Some of the difficulties of computing national income from the product side are well illustrated in the discussion over the differences in estimates by Warburton and by Kuznets, in Clark Warburton, "Three Estimates of the Value of the Nation's Output of Commodities and Services: a Comparison," *Studies in Income and Wealth*, III, especially the discussion by Warburton and Kuznets, pp. 381-97.

service rendered by a retailer when he sells goods. This element can be produced only as the sale occurs. To count the sale is to count the act of production. The other element that is purchased in any sale is the commodity that the seller had on hand. The sale is counted, but a counterbalancing entry is made as decrease in inventory or wearing out of equipment (depreciation). Insofar as purchases are made possible by drawing on inventories or using up equipment, machinery, and so on, no accretion to national income or net national product is recorded in the accounts, even when measuring from the product side.

3. There is one type of purchase the inclusion of which would give rise to double counting. This type, not very frequent, is characterized in principle by the fact that the seller keeps no balance sheet and also has not produced the article himself. If a purchase from such an owner is included, the national income is overstated. The buyer shows an increase in his assets other than money, the seller records no decrease, and the implication, therefore, is that the asset has been produced during the year.

If the seller produced the article himself, but in a previous year, the absence of balance-sheet accounting on his part still bars the inclusion of the purchase in computing national income from the product side if a correct total for the current year is sought. If the only aim is a correct cumulative total over the span of years, the purchase must be included.

Actually, the issue raised in the two preceding paragraphs is met in an indirect manner by the compilers of national income. They do not compare the concern's fixed assets at the beginning and end of the year. Instead, they count among the assets acquired during the year only the assets constructed during that year; if firm A buys a factory or a used machine from firm B, that purchase is ignored. It is ignored as a sale, too. Thus the danger of double counting described in the first paragraph of this section is avoided.

4. The product concept can be left on a gross basis by subtracting neither depreciation nor depletion of natural resources. Item (c) in § 1 becomes "increase in business assets (other than inventories) without subtracting depreciation and depletion of assets." The total of items (a) to (e) in § 1 as thus computed is the "gross national product" of the Commerce series, with some qualifications to be noted in other sections of this chapter.

## B. Investment Contrasted with Current Expense

5. The concept of "final product" involves two sub-concepts that are crucial. The first is an outlay for investment, as distinguished from an expensed outlay. The second is an outlay for consumption as distinguished from an outlay for business purposes.

6. A business firm, as such, makes no purchases for consumption. It is not a consuming unit. When it spends money, it either "capitalizes" or "expenses" the outlay.

To capitalize the outlay, it will be recalled (Chapter 2, § 2), is to assume that it produces immediately, for the firm itself, an asset worth at least the amount of the outlay. On the firm's balance sheet, cash decreases and a new non-cash asset of some kind appears. The new asset may be a building or a machine, for example, that is entered on the balance sheet at cost. It is then depreciated year by year as it wears out or ages. Or the new asset may be an inventorable one. In this case it is likewise entered among the assets at its cost and is removed when it is sold. In between acquisition and sale, the inventoried asset is commonly marked down in value to what it could be purchased for on the open market if the cost of obtaining a replacement for it declines.

To expense an outlay is to assume that for the time being the outlay produces only a possible future benefit for the firm, a benefit which it is hoped will be realized in higher sales or lower costs than would obtain if the outlay had not been made. For the moment, the outlay is a loss for the concern, since cash decreases and no compensating asset appears. A salary payment to an executive and the purchase of office supplies are possible illustrations. In practice, the distinction depends on how much of this kind of overhead or indirect expense is allocated to goods in process (that is, inventory) by the particular cost accounting system used by the firm. If no cost accounting system is used, no part of such outlays is capitalized.

It will also be recalled (Chapter 2, § 3) that to make the kind of outlay that is capitalized is, in national income terminology, to perform an act of investment. Correspondingly, to decrease the value of a balance-sheet asset other than money or a money claim, as by depreciation, is to perform an act of disinvestment. And if one business firm sells another such an asset, the first firm disinvests and the second one invests.

Over a decade or so, the distribution of the national income among the years depends substantially on prevailing accounting practices

that determine what kind of outlays are to be expensed and what kind capitalized. A business that is getting started may expect to show losses during the first few years. During those years the kind of outlays that accounting practice does not capitalize are usually greater than sales proceeds. The resulting apparent loss, which keeps the total of national income for these years lower than it would be if the outlays were capitalized, is presumably spurious if the businessman's hopes are justified; the loss appears at all only because so short a period is selected for the national income accounting. A country that is undergoing a transformation from an agricultural to an industrial society may for some years show a national income that understates the total measure of its production.

If the outlays of the early years were capitalized, the assets they produced would be termed good will, establishment of habits of use and channels of trade, newly discovered methods of production, and so on. The unwillingness of accountants to capitalize such outlays reflects a belief that undue pessimism is to be preferred to undue optimism.

### C. Consumption Contrasted with Business Outlay

7. Neither government nor consumers keep balance sheets. When they spend money for something, the thing purchased ordinarily disappears from the economy's records forever. It is listed as having been "purchased by government" or "purchased for consumption." But the economic realities may not be correctly described by this method of record-keeping.

8. In the first place, the outlay may be for a consumer good that lasts beyond the year of purchase. In principle, such an outlay should be treated as an act of investment, followed in later years by consumption through disinvestment as the article is used up. A city may create a park; a consumer may buy an automobile. Prevailing methods of accounting include neither one in the total of investment, excepting houses and government properties operated on a commercial basis.<sup>1</sup>

<sup>1</sup> The research staff of the Securities and Exchange Commission has estimated the net increase in consumers' holdings of dwellings, automobiles, and durable household goods, and the net increase in structures of non-profit institutions. To obtain a net figure, depreciation must be estimated. For these estimates see R. W. Goldsmith and Walter Salant, "The Volume and Components of Saving in the United States, 1933-1937," in *Studies in Income and Wealth*, III, 273-79. For an estimate of current services from the stock of durable goods held by consumers in 1940-42, see *Survey of Current Business*, March, 1943, p. 14, Table 3.

9. In the second place, when an article is used up, it is not always clear whether the using-up is strictly in the course of business or whether it is to be considered consumption. If it is the latter, the article is a "final product," and is to be counted in computing the net national product. But if the using-up occurs merely in the course of producing another article, the used-up article is by definition not a final product, and the national income is correspondingly lower.

An automobile factory purchases an extra hundred tons of sheet steel and with it produces more passenger automobiles. Evidently the addition to the total of final products does not consist of the steel plus the automobiles; that would be counting the steel twice.

Instead of purchasing the extra steel, the automobile manufacturer spends an equal amount of money on additional supplies of fuel that make possible faster and more efficient operation of the power mechanisms in the factory. The result happens to be the same increase in number of automobiles turned out. The fuel does not appear, physically embodied, in the automobile, as does the steel; still, no one would count both the fuel and the automobile in the final product. Neither the steel nor the fuel, considered apart from the automobile, renders any service to consumers, contributes in any way to increasing the material welfare of the people.

Instead of buying extra steel or extra fuel, the management spends the same amount of money on devices to lessen accidents and on medical and hospital service to care for those who are injured in the course of work. The result happens to be the same increase in output of automobiles. If the extra automobiles are counted in the final-product total, shall the services of accident prevention and medical care be excluded? The answer depends on the concept of material welfare of which the national income is being used as a partial indicator.

10. Two chief concepts of final product emerge as alternatives. In one, the concept of material welfare is so restricted that "final product" includes, in its consumer-purchases category, only those commodities and services of which the using-up does not increase the production of other commodities and services. They could be dispensed with, and production would not decline. The sole aim they serve is personal gratification. Strictly, few if any commodities or services could meet this test of a final product. Or rather, a marginal amount of almost any product — including medical services — could

meet it. Of all the food consumed in the United States, a certain amount — say 10 per cent for illustration — could be dispensed with and the working force would not be so weakened in bodily strength or incentive that a decline in production would result. But of course the 10 per cent decrease could not be spread evenly; some workers would show a decline in output, sooner or later, if any decrease at all occurred in their consumption of food. Moreover, the maximum decrease could be reached only by rearranging the entire diet.<sup>1</sup>

Under this narrow concept of material welfare, and hence final product, the medical services rendered in the example in § 9 would be excluded from the final product. But medical service to cure a skin disease that in no way impedes production would be included.

The consumer-goods element in final product as thus narrowly defined will be termed “pure consumer goods.”

11. At the other extreme, the concept of material welfare is so broadened that national income, as a partial index of that welfare, includes in its consumer-purchases sub-total any commodity or service that is prized by a human being at least in part for its own sake. Hence it includes those goods that, in being consumed, also serve to increase the production of other things. This latter type of commodity or service will be referred to as “mixed consumer goods.”

The two types together make up “consumer goods,” that is, commodities or services that are prized partly or wholly for their own sake.

If mixed consumer goods are included, the medical service supplied by the automobile factory would be a final product, while the steel or the fuel — alternative agents for getting the same increase in automobile output — would still be excluded.

12. Under prevailing methods of accounting, however, the distinction between final products and intermediate products seems to be based on the purpose behind the outlay rather than on its effect.<sup>2</sup> The purpose of the automobile company in laying out money on medical service is not primarily to gratify its employees, but rather to increase the production of automobiles. Consequently, the medical service is not counted as a final product; and, on the factor-payment side, the outlay is deducted as a business expense. But if the employee,

<sup>1</sup> See George J. Stigler, “The Cost of Subsistence,” *Journal of Farm Economics*, May, 1945. The decrease in food consumption obtained by moving to a minimum-cost diet of the type described by Stigler would exceed that part of the original consumption that could be termed pure consumer goods, since such a decrease would affect incentive to work.

<sup>2</sup> For a different view, see W. W. Hewett, *Studies in Income and Wealth*, I, 296–98.

injured in the plant, goes to a doctor at his own expense, his purpose is not primarily to increase the output of automobiles, but to get relief for himself. Consequently, under the prevailing methods of accounting, the medical service is considered as a final product, a part of consumer goods.

**13.** Whether the division should be drawn along lines of purpose, presence of individual gratification, or lack of influence on volume of production depends on what is the paramount interest in the broad concept of material welfare. Why are people interested in aggregate measures, or indexes, of national income deflated by a price index of final products? Probably, in most cases, because of an interest in the amount of individual gratification. Even though in principle it is not possible to add the gratifications of two or more persons, the general interest in national income totals reflects a desire to assume that such addition is reasonable. If this statement correctly reflects the use that people tend to make of national income data, the final-product total should include all goods that, in the using-up, yield gratification to someone. They comprise all pure consumer goods and mixed consumer goods. Such a definition would substantially increase the size of the national income, compared to prevailing computations. An increase would be shown even if the figure were written down to allow for the fact that some of the products are not worth to the consumers what the purchasers pay for them (the medical service supplied by the factory, for example). This definition also raises the question whether an individual, in working, gets a gratification from "using up" himself and his instruments of production, rather than idling in boredom, that should also be included in the final product. Finally, it calls attention to the possible lack of provision, in a competitive private economy, for inducing the spender of the money to weight the choice in favor of a product that will yield a consumer satisfaction when two products, equally suited to increase production, are being considered. In the illustration above, the automobile producer has no economic inducement to supply the medical service instead of the extra steel. Only if some mechanism is effective whereby the beneficiaries — here, the employees — can offer to pay part of the costs, as through accepting lower money wages, will the choice be decisively in favor of the method that yields a larger total satisfaction.

**14.** Although the general interest in national income totals is along lines of immediate personal gratification, the interest of policy-makers



may be more in the field of production. To them the important distinction is not the one between the medical service and the steel, but between the last 10 per cent of food consumed and the preceding 90 per cent. If the 10 per cent can be reduced without causing a decline in production, it can be regarded as a final product (pure consumer goods) in the sense that it is of no significance for production. It can be called unproductive consumer goods if no ethical judgments are attached to that phrase. The relative output of final products, as thus defined, and intermediate products over a given span of time gives some clue to the potentialities of the economy for further increase in production by diverting some resources from the making of these final products.

Adoption of this concept of final product would produce an income total that would seem exceedingly small in the light of prevailing practice. Nevertheless, it would be the proper quantitative tool to use in answering some pressing economic questions. Among the most urgent of these are the methods by which nations are attempting to raise the general standard of living of their people.

15. An individual may be consuming both mixed and pure consumer goods; he may have pushed his consumption of one article beyond the point where a decrease in it would affect his production, while his consumption of another is still short of that level. But in the more usual case, small amounts aside, it seems likely that the consumer will be below or above the line between mixed and pure consumer goods with respect to all the commodities and services he is consuming. To be below the line means, therefore, that his consumer goods in general can be increased in a pattern that will result in an improvement in bodily or mental vigor, or incentive, that will in turn produce an increase in his output, now or later.

The market value of the consequent increase in output might be less than the market value of the increase in mixed consumer goods utilized. It might, on the other hand, be greater. If output would increase by more than the increment of mixed consumer goods utilized, a mixed-consumer-goods deficiency exists. If output would increase, but by less than the increment in mixed consumer goods utilized, no mixed-consumer-goods deficiency, as implicitly defined above, exists.

The food, clothing, shelter, and other goods devoted to children are for the most part mixed consumer goods rather than pure consumer goods if the time span under study covers more than a few

years. From this point of view, outlays for such a purpose might be capitalized and written off in depreciation in later years.

The relation between consumption and production under study here does not, of course, refer to the monetary stimulus to production that business firms experience upon an increase in consumer spendings. The problem here is physical or mental, not monetary. By consuming more food, clothing, medical care, and shelter, the consumer-workers become stronger, less subject to illness, longer-lived, and in general better adapted to their environment.

**16.** Practical use of the concepts of mixed consumer goods and a possible deficiency of such goods is of special importance to countries that are attempting an economic expansion by increasing first the production of plant and machinery rather than the production of consumer goods. Such countries include those which have experienced centuries of an agricultural economy that has supplied only a low standard of living (China and India), and countries that have been largely de-industrialized by losing a war (Germany and Japan). A centrally planned economy that is attempting to increase its industrialization very rapidly (Soviet Union) must likewise consider how much total production may drop if the output of mixed consumer goods is decreased in an effort to release resources for the production of capital goods.

A country that is experiencing a deficiency in mixed consumer goods may be able to get outside help. Up to the point where it moves out of the deficiency range, it can pay back what it borrows and have some goods to spare; its production increases faster than its use of consumer goods. Consequently, a country that is in the range of a mixed-consumer-goods deficiency has the choice between two ways of increasing total output through outside aid: by borrowing to increase the amount of consumer goods made available and by borrowing to increase its stock of capital goods. Conceivably, the former method may give a greater rate of increase in total output than the latter, even over a period of time long enough to allow for the using-up of the capital goods. Food, clothing, and shelter may be more effective intermediate goods than electric generators or locomotives.

The so-called "Bombay Plan" contemplates a doubling of the per-person national income of India within fifteen years from the end of the war, assuming the existence of a "national government . . . vested with full freedom in economic matters," a "national planning com-

mittee," and a "supreme economic council." In view of the rate of population growth, this goal requires a trebling of the total national income. The net output of agriculture would be doubled and that of industry would increase to five times its present level. There can be no *a priori* assumption that this goal is an impossible one, given the likelihood that India starts from far down in a deficiency range of mixed consumer goods.<sup>1</sup>

17. A nation may not respond at all to an increased utilization of consumer goods; its national output (national income) may remain unchanged. All of the increase in consumer goods utilized is unproductive. The entire increment is seen to be only pure consumer goods. This result is likely to be approached at the two ends of the national income scale. Everyone may be enjoying so high a standard of living already that an increase breaks down no barriers to production, since there were none in these terms. A substantial number of the people of the United States are probably not far from that level. No doubt some change in the pattern of consumer goods even in the wealthier areas of the United States would give rise to an increase in output; but the increase would perhaps be closer to 10 per cent than 50 per cent of the increase in consumer goods utilized.

At the other extreme is a country with a per-person output that is very low owing to climatic conditions like excessive heat and humidity or excessive cold. If these conditions are coupled with a moderate endowment of natural resources, output may have approached an absolute maximum, not to be passed by any increase in consumer goods utilized. This condition may be indicated by the existence of a somewhat different kind of phenomenon, a failure of an increase in factor payments to induce more work. The Economic Policy Committee in Jamaica concluded that "... the evidence shows that when rates of pay are raised in agriculture in Jamaica, workers tend to do less work rather than more. . . . The main explanation appears to be that most people do not want to work for long hours in a hot climate. They prefer to have a lower standard of living (lower national income) and more leisure. . . ." But the committee adds that a partial explanation is malnutrition and disease, and advocates a public health program "to increase the earning power of labour besides relieving distress."<sup>2</sup>

<sup>1</sup> Sir Purshotamdas Thakurdas and Others, *Memorandum Outlining a Plan of Economic Development for India* (Harmondsworth and New York: Penguin Books, 1944), 63 pp.

<sup>2</sup> *Report of the Economic Policy Committee* (Kingston, Jamaica, 1945), pp. 1, 14. Dr. F. C. Benham, Chairman.

18. The variety of mixed consumer goods is much greater in urban centers than elsewhere. Costly transportation facilities, high dwelling costs resulting from erecting much dwelling space on little land, and the special expenses in clothing and care of the person that are demanded of those who want to live in the crowded conditions of large cities are all charges for mixed consumer goods.<sup>1</sup>

## II. THE COMPUTATIONS: TOTALS

19. The computations of Kuznets, the Commerce Department, and the British White Paper follow the lines of distinction between final products and intermediate products that are implicit in the accounting records of the business world, which are based on purpose of outlay rather than effect on consumers (gratification) or on production.

To understand the totals reached in these computations from the product side, it is necessary to examine briefly the differences among the three computations in the treatment of item (*e*) in § 1, goods and services purchased by government (see also §§ 27–29).

The Commerce Department includes in item (*e*) all commodities, labor, and other goods and services purchased by government, and calls its total of items (*a*) through (*e*) the “net national product.” Kuznets’ total includes only construction by or for government, as investment, plus an amount equal to personal taxes paid. This latter amount is presumed to equal that part of the goods and services dispensed by government that are final products and, as such, serve consumers directly, as distinguished from intermediate products, which serve business firms (cf. Chapter 4, § 8). Consumers are considered to “purchase” from government, with their personal taxes, the goods and services dispensed by the government, free of direct charge, to consumers. The British White Paper utilizes two concepts on the product side. Like the Department of Commerce, it includes all goods and services dispensed by the government free of charge, and obtains a total which it calls “net national product at market value.” It then subtracts an amount equal to indirect taxes paid (minus subsidies to business by the government) to obtain a “net national product at factor cost.” This factor-cost product equals its national income total as a sum of factor payments, since the in-

<sup>1</sup> For a discussion of the final-product concept, see Kuznets, *National Income — A Summary of Findings*, part IV, sec. 1. The relation of consumption to production is emphasized in Alfred Marshall, *Principles of Economics*, bk. VI, chaps. II–V. See also Arthur Smithies, “National Income as a Determinant of International Policy,” *Studies in Income and Wealth*, VIII, 53–57.

direct taxes are subtracted, and the subsidy payments are included, in computing the factor payment, profits.

The "net national product" of the Commerce Department is larger than its "national income" computed as the sum of factor payments. Primarily, it is larger by the amount of business taxes; certain other items will be noted in § 20. The Department deducts business taxes in computing payments to factors.<sup>1</sup> On the product side, all government goods are counted, including those financed by business taxes. The Department computes no "national income" total on the product side, corresponding to the British "net national product at factor cost."

It was stated as a general principle in Chapter 1 (§ 1) that the national income total should be the same, whether measured as the sum of factor payments for producing final goods and services or as the value of the final goods and services produced. The implications of the Commerce Department procedure, which does not observe this principle, will be examined in Chapter 7.

Kuznets' product series includes no item (e) at all, no government purchases as such, except as his "construction" sub-total under capital formation is broken down between government and private enterprise. The government product "purchased" by consumers through personal taxation is included in Kuznets' total of consumer expenditures. Consequently, Kuznets' product series excludes two segments of government goods and services. First, it excludes an amount equal to the total of business taxes, on the ground that these taxes are payments for services by government to business. Second, it excludes an amount equal to any excess of government borrowing over government construction plus increases in other government assets. Such excess borrowing, being borrowing to cover current expenses rather than capital outlay in Kuznets' concepts, reflects a current economic deficit or waste; the goods and services bought with this borrowed money are considered by him to be worth nothing. Kuznets' factor-payment series, it will be recalled, also excludes amounts equal to business taxes and government deficit on current account (Chapter 5, §§ 49, 57). His net product total, therefore, equals his net factor-payment total.

**20.** In the accompanying tables the Department of Commerce

<sup>1</sup> Some details on how the total of business taxes is estimated are given in *Survey of Current Business*, March, 1943, pp. 25-26, Table B and notes to Table B.

estimates of product — consumer purchases, net change in inventory, and so on — will be expressed as a percentage, not of national income, but of national income plus business taxes, inclusive of the adjustment made to remove the influence of price fluctuations on changes in inventory (Chapter 5, §§ 39–44), and plus two other items to be explained below (§§ 24, 69). The several product components as estimated by the Commerce Department contain these elements. Of the amounts paid by consumers, for example, a part goes to the government in business taxes and only the remainder eventually finds its way into the hands of the factors of production. Consequently, the sum of the product components expressed as percentages of national income would exceed 100, for national income does not include business taxes. Similar reasoning applies to the other items noted above, for one or more of the product elements.

The resulting product total, with which each of the product components can be compared, is still a “net” total in the sense that it is computed after deducting depreciation. It is, in fact, roughly gross national product (§ 54) minus depreciation. The name that the Commerce Department has given it is “net national product.”<sup>1</sup> Table 18 presents estimates of net national product derived from the Commerce Department data. The totals in the product-component tables that follow will still not add quite to the net national product

TABLE 18  
Net National Product, Commerce Definition (Unrevised Series),  
United States, 1929–46<sup>a</sup>

(in billions of current dollars)

| 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 |
|------|------|------|------|------|------|------|------|------|
| 92.6 | 81.3 | 65.4 | 49.2 | 48.8 | 57.9 | 64.9 | 75.5 | 81.6 |

| 1938 | 1939 | 1940 | 1941  | 1942  | 1943  | 1944  | 1945  | 1946  |
|------|------|------|-------|-------|-------|-------|-------|-------|
| 74.4 | 82.4 | 90.7 | 113.2 | 144.7 | 179.4 | 189.4 | 191.2 | 186.8 |

<sup>a</sup> For 1929–38, *Survey of Current Business*, May, 1942, p. 12, Table 1; for 1939–40, *ibid.*, April, 1944, p. 14, Table 13; for 1941–43, *ibid.*, February, 1946, p. 7, Table 5; for 1944–46 *ibid.*, February, 1947, p. 8, Table 5. The revised series is in Appendix B below.

<sup>1</sup> Milton Gilbert and R. B. Bangs, “Preliminary Estimates of Gross National Product 1929–41,” *Survey of Current Business*, May, 1942, pp. 9–10.

total, because one of those tables (Table 26) uses revised data that have not yet been incorporated into the total series published by the Commerce Department from which Table 18 figures are derived.

The Department of Commerce itself has not yet published a net national product series, chiefly because of the unsatisfactory nature of the depreciation estimates<sup>1</sup> (which, however, it must use in its computations of national income). The Department attaches more importance to gross national product, to be described below (§§ 54 ff.).

In its forthcoming revision of national income data, the Department of Commerce will publish a "net national product" series, differing from "national income" as follows: inclusion of business taxes, business transfer payments (for example, gifts by corporations), bad-debt allowances (§ 24), and exclusion of subsidies (Chapter 7, § 59). It will also include an inventory adjustment (Chapter 5, §§ 39 ff.).<sup>2</sup>

Whenever a Kuznets net series is used in the product tables below, it is expressed as a percentage of national income as computed by Kuznets.

Direct estimates including all five types of product (§ 1) have been relatively rare in the United States and nonexistent in other countries.<sup>3</sup> However, in the Kuznets and Commerce series, direct estimates of all but one of the five products, or of all but one part of one of the products, have allowed computation of the missing product as a residual; that is, by subtracting the sum of the directly estimated products from the total national income. The series presented in the following sections cover 1919-38 (Kuznets) and 1929-46 (Commerce).<sup>4</sup>

<sup>1</sup> Edward F. Denison, "Report on Tripartite Discussions of National Income Measurement," *Studies in Income and Wealth*, X, 12 (mimeograph).

<sup>2</sup> *Ibid.*, p. 6. Several national income analysts consider "net national product" an inappropriate term, suitable rather for use as the product counterpart of "national income." "Net national income at market prices" has been suggested. *Ibid.*, pp. 7, 66, 72, 73, 75, 83-85.

<sup>3</sup> See Clark Warburton, "Three Estimates [Kuznets, Lough, Warburton] of the Value of the Nation's Output of Commodities and Services: A Comparison," *Studies in Income and Wealth*, III, 319-97.

<sup>4</sup> Since the chief interest here in presenting two series instead of one is to evoke a realization of the differences arising primarily from statistical techniques and basic material utilized, rather than from differences in concepts, the Kuznets data for 1939-43 in his *National Product since 1869* are not included in the following tables, for they are extrapolations based on Department of Commerce data. "No basic work on national product or capital formation estimates has been done at the National Bureau for years beginning with 1939"; *ibid.*, p. 18. Moreover, the difference in concepts between Kuznets and Commerce concerning the government contribution to national income makes a meaningful comparison of the two series particularly difficult for the war years.

"Direct estimates" are those in which the estimate is constructed from data on the industry concerned; a direct estimate of retail sales is made from data on retail store operations. An indirect estimate is made largely from data on some other industry. The technique of an indirect estimate of retail sales is given in § 23. The residual method of estimating has been mentioned in the paragraph immediately preceding. All three methods have been employed in estimating the amount of consumer purchases (§§ 21-23).

Inability to make direct estimates on the product side, of course, does not prevent the computation of a total for gross national product. In terms of Commerce Department procedure, to national income as computed from factor payments there are added business taxes, depreciation and depletion, and certain other items (§§ 24, 54, 69; and Chapter 5, § 41).

### III. CONSUMER PURCHASES

**21.** The total of goods and services purchased by consumers has been estimated in three different ways: as a residual, directly, and indirectly.

The estimates for 1929-39 by the Department of Commerce (Table 19) use the residual method, with respect to non-durable goods and services. Gross national product is computed from the factor-payment approach (§ 69). From this indirect estimate of the gross national product are subtracted the estimated purchases of goods and services by government (§ 27), and the items that make up gross capital formation: private construction (§ 34), private producers' durable equipment (§ 38), net change in business inventories (§ 31), and net change in claims on non-residents (§ 40). The residual amount is purchases by consumers. From this residual there is subtracted an estimate of consumer purchases of durable goods, an estimate that is made by the indirect method described in § 23. The resulting residual is purchases by consumers of non-durable goods and services.<sup>1</sup> Purchases of durable goods in this series include purchases of household furniture and automobiles, but not purchases of homes. Moreover, net imputed rent and depreciation, as well as taxes on owner-occupied homes, are nowhere in this series of consumer purchases. Amounts spent for maintenance, repairs, and mortgage

<sup>1</sup> *Survey of Current Business*, May, 1942, p. 13, note to line 16 of Table 2; March, 1943, p. 24, note to lines 16-19 of Table 10.



TABLE 19

Purchases of Goods and Services by Consumers, United States, 1929-46 (Commerce) <sup>a</sup>

(in billions of current dollars)

| Year | Total             |  | Durable Commodities |                                      | Non-Durable Commodities |                                      | Services        |                                      |
|------|-------------------|--|---------------------|--------------------------------------|-------------------------|--------------------------------------|-----------------|--------------------------------------|
|      | Absolute Amount   | Per Cent of "Net National Product" (Commerce) <sup>b</sup> | Absolute Amount     | Per Cent of Total Consumer Purchases | Absolute Amount         | Per Cent of Total Consumer Purchases | Absolute Amount | Per Cent of Total Consumer Purchases |
| 1929 | \$70.8            | 76.5   | \$9.9               | 14.0                                 | \$60.9 <sup>d</sup>     | 86.0                                 | ..              | ..                                   |
| 1930 | 64.9              | 79.8   | 8.1                 | 12.5                                 | 56.8 <sup>d</sup>       | 87.5 <sup>d</sup>                    | ..              | ..                                   |
| 1931 | 54.2              | 82.9   | 6.3                 | 11.6                                 | 47.9 <sup>d</sup>       | 88.4                                 | ..              | ..                                   |
| 1932 | 43.0              | 87.4   | 4.2                 | 9.8                                  | 38.8 <sup>d</sup>       | 90.2                                 | ..              | ..                                   |
| 1933 | 42.4 <sup>c</sup> | 86.9   | 3.4                 | 8.0                                  | 39.0 <sup>d</sup>       | 92.0                                 | ..              | ..                                   |
| 1934 | 47.7              | 82.4   | 4.8                 | 10.1                                 | 42.9 <sup>d</sup>       | 89.9                                 | ..              | ..                                   |
| 1935 | 52.2              | 80.4   | 5.7                 | 10.9                                 | 46.5 <sup>d</sup>       | 89.1                                 | ..              | ..                                   |
| 1936 | 59.1              | 78.3   | 6.7                 | 11.3                                 | 52.4 <sup>d</sup>       | 88.7                                 | ..              | ..                                   |
| 1937 | 62.5              | 76.6   | 7.6                 | 12.2                                 | 54.9 <sup>d</sup>       | 87.8                                 | ..              | ..                                   |
| 1938 | 58.5              | 78.6   | 6.0                 | 10.3                                 | 52.5 <sup>d</sup>       | 89.7                                 | ..              | ..                                   |
| 1939 | 61.7              | 74.9   | 6.4                 | 10.4                                 | 32.6                    | 52.8                                 | \$22.7          | 36.8                                 |
| 1940 | 65.7              | 72.4   | 7.4                 | 11.3                                 | 34.4                    | 52.4                                 | 23.9            | 36.4                                 |
| 1941 | 74.6              | 65.9   | 9.1                 | 12.2                                 | 40.1                    | 53.8                                 | 25.4            | 34.0                                 |
| 1942 | 82.0              | 56.7   | 6.3                 | 7.7                                  | 47.9                    | 58.4                                 | 27.8            | 33.9                                 |
| 1943 | 91.3              | 50.9   | 6.6                 | 7.2                                  | 55.1                    | 60.4                                 | 29.7            | 32.5                                 |
| 1944 | 98.5              | 52.0   | 6.7                 | 6.8                                  | 60.0                    | 60.9                                 | 31.8            | 32.3                                 |
| 1945 | 106.4             | 55.6   | 7.7                 | 7.2                                  | 65.6                    | 61.7                                 | 33.1            | 31.1                                 |
| 1946 | 127.2             | 68.1   | 14.1                | 11.1                                 | 77.3                    | 60.8                                 | 35.8            | 28.1                                 |

<sup>a</sup> *Survey of Current Business*, May, 1942, p. 12, Table 2 (1929-38); April, 1944, p. 13, Table 10 (1939-40); February, 1946, p. 8, Table 6 (1941-44); February, 1947, p. 7, Table 1 (1945-46).

<sup>b</sup> Computed from Table 18.

<sup>d</sup> Includes purchases of services. Separate figures for services not available in the currently published national income series. For estimates covering 1929-42, to be used in a forthcoming revision of the series, see William H. Shaw, "Consumption Expenditures, 1929-43," *Survey of Current Business*, June, 1944, p. 11, bottom of Table 2.

<sup>c</sup> The total, 42.8, as published in the source (note a) is a misprint.

interest are therefore the only elements of home-ownership that appear in this unrevised Commerce series of consumer purchases.

Kuznets, in obtaining his estimate of consumer outlay, also uses the residual method. From national income as computed under the factor-payment approach he passes to gross national product, as defined by him, by adding depreciation and depletion (and charges to fire losses). From gross national product he subtracts the items that make up his concept of gross capital formation. The remainder of the gross national product is total consumer outlay. This total is broken down into commodities and services by making an indirect estimate of consumer purchases of commodities, in the manner described in § 23 below. Kuznets' estimate of consumer services is therefore a residual.<sup>1</sup>

In contrast to the Department of Commerce, Kuznets does not add business taxes to national income in computing gross national product. And in passing from gross national product to consumer outlay he does not subtract any of the government purchases of goods and services, except construction.<sup>2</sup> His national income total of factor payments, it will be recalled (Chapter 5, § 49), is computed after subtracting business taxes, but without subtracting personal taxes. Consequently, in moving from national income to gross national product and then to consumer outlay, the item, personal taxes, stays in and the item, business taxes, never gets in. Therefore, Kuznets' consumer-outlay total includes an amount equal to personal taxes. This fact is perhaps not always realized by those who make use of Kuznets' "consumer-outlay" series. In the Kuznets data, a consumer uses his income for only two purposes: consumer outlay and saving. "Consumer outlay" includes personal taxes because, in Kuznets' view, consumers "purchase" commodities and services from the government in an amount equal to the personal taxes they pay. However, Kuznets has published the series of personal-tax data that is included in his "services total," and Table 20, which presents the latest Kuznets series on consumer purchases ("flow of goods to consumers"), shows the personal-tax element separate from the rest of the service total, for purposes of comparison with the Commerce Department data in Table 19.

<sup>1</sup> See Kuznets, *National Product since 1869*, pp. 7-12.

<sup>2</sup> Kuznets, *Commodity Flow and Capital Formation*, pp. 498-99, Table VIII-4. A less important exception concerns difference in treatment of imputed rental.

TABLE 20

Purchases of Goods and Services by Consumers <sup>a</sup> ("Flow of Goods <sup>b</sup> to Consumers"), United States, 1919-38 (Kuznets) <sup>c</sup>

(in billions of current dollars)

| Year | Perishable | Semi-Durable | Durable | Services<br>Excluding<br>Personal<br>Taxes | Personal<br>Taxes | Total Flow<br>of Goods to<br>Consumers |
|------|------------|--------------|---------|--|-------------------|--|
|      | (1)        | (2)          | (3)     | (4)  | (5)               | (6)                                    |
| 1919 | 24.4       | 10.1         | 5.4     | 12.0                                       | 2.0               | 54.0                                   |
| 1920 | 26.9       | 11.7         | 6.2     | 15.8                                       | 2.3               | 63.0                                   |
| 1921 | 21.8       | 9.5          | 5.0     | 17.7                                       | 2.2               | 56.3                                   |
| 1922 | 21.1       | 9.8          | 5.5     | 17.9                                       | 1.9               | 56.2                                   |
| 1923 | 22.7       | 11.1         | 7.0     | 20.0                                       | 2.1               | 62.9                                   |
| 1924 | 23.4       | 10.5         | 7.0     | 23.2                                       | 2.0               | 66.2                                   |
| 1925 | 25.0       | 11.0         | 8.0     | 20.5                                       | 2.1               | 66.6                                   |
| 1926 | 26.6       | 11.5         | 8.3     | 23.3                                       | 2.4               | 72.1                                   |
| 1927 | 26.3       | 11.7         | 7.9     | 23.5                                       | 2.4               | 71.8                                   |
| 1928 | 26.9       | 11.8         | 8.1     | 24.5                                       | 2.6               | 73.9                                   |
| 1929 | 28.0       | 12.1         | 8.8     | 24.8                                       | 3.0               | 76.7                                   |
| 1930 | 25.9       | 10.5         | 6.8     | 27.5                                       | 2.8               | 73.5                                   |
| 1931 | 21.2       | 8.8          | 5.2     | 22.8                                       | 2.3               | 60.3                                   |
| 1932 | 17.8       | 6.5          | 3.4     | 17.6                                       | 1.9               | 47.3                                   |
| 1933 | 17.8       | 6.3          | 3.5     | 16.3                                       | 1.9               | 45.9                                   |
| 1934 | 20.7       | 7.3          | 4.1     | 18.6                                       | 2.1               | 52.8                                   |
| 1935 | 22.8       | 7.9          | 5.0     | 15.9                                       | 2.4               | 54.0                                   |
| 1936 | 25.3       | 8.5          | 6.1     | 16.4                                       | 2.9               | 59.2                                   |
| 1937 | 27.2       | 8.6          | 6.6     | 19.9                                       | 3.6               | 65.9                                   |
| 1938 | 25.7       | 8.4          | 5.3     | 22.0                                       | 3.5               | 64.9                                   |

<sup>a</sup> Includes personal taxes. See § 21.

<sup>b</sup> Kuznets uses the term "goods" to include both "commodities" (Commerce Department "goods") and "services."

<sup>c</sup> Kuznets, *National Product since 1869*, p. 35, Table I-5, and p. 32, Table I-4A, col. 7. The series also includes 1939-43, not reproduced here (see footnote 4 on p. 157).

22. The direct method is used in part by the Department of Commerce in estimating the annual totals of consumer expenditures for 1940-46 (see Table 19). From the 1939 figure, as obtained under the residual method, the estimates for the later years are obtained by extrapolation. The extrapolation is based on the year-to-year changes in totals for 1939-46 computed under the direct method. These totals contain some conceptual differences from the old series,

for which adjustment is made when using them for extrapolation. The 1940-46 estimates are thus a hybrid, as concerns technique.<sup>1</sup> The direct estimate is made by estimating "retail sales" to consumers, largely from data on sales of retail stores, and by adding direct estimates of sales of services not included in the "retail sales" total.<sup>2</sup> Hence, a separate total for services is given for 1939 and the following years.

**23.** The indirect method of measuring total consumer purchases appears to be the one that will be used in the forthcoming revision of the Commerce Department estimates of gross national product. The estimates have already been made public. They compare as follows with those in Table 19, reached under the residual (1929-39) and residual-direct (1940-42) methods (in billions of dollars):

In Table 19:

| 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 |
|------|------|------|------|------|------|------|
| 70.8 | 64.9 | 54.2 | 43.0 | 42.8 | 47.7 | 52.2 |

| 1936 | 1937 | 1938 | 1939 | 1940 | 1941 | 1942 |
|------|------|------|------|------|------|------|
| 59.1 | 62.5 | 58.5 | 62.0 | 66.2 | 74.6 | 81.9 |

Indirect method:

| 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 |
|------|------|------|------|------|------|------|
| 78.4 | 71.1 | 61.4 | 49.7 | 46.6 | 52.0 | 56.4 |

| 1936 | 1937 | 1938 | 1939 | 1940 | 1941 | 1942 |
|------|------|------|------|------|------|------|
| 62.3 | 66.2 | 63.3 | 66.5 | 70.8 | 80.6 | 88.7 |

The differences are traceable in part to conceptual differences, notably the inclusion, in the indirect-method series, of the following elements of gross imputed rent of owner-occupied dwellings: net imputed rent, depreciation, and taxes. Interest paid and repairs were already in the other series.

The indirect method is based chiefly on data from the biennial *Census of Manufactures*. This and other censuses record the value of goods as they emerge from factory, farm, and other producing units. The national income estimator divides this flow into goods destined

<sup>1</sup> *Survey of Current Business*, March, 1943, p. 24, notes to lines 16-19 of Table 10.

<sup>2</sup> William C. Shelton and Louis J. Paradiso, "Monthly Estimates of Total Consumer Expenditures, 1935-42," *Survey of Current Business*, October, 1942. See also Louis J. Paradiso and Lawrence Bridge, "Sales of Wholesalers, 1929-43," *ibid.*, August, 1943.

for consumers and goods destined to be used up in business enterprises. The division is difficult to make, especially since some commodities — coal, for example — serve both ends. For each commodity group, estimates are then made of transportation charges, changes in wholesalers' and retailers' inventories, imports and exports, and wholesalers' and retailers' mark-ups. The result is an indirect estimate of the total of commodities sold at retail prices. A direct estimate of consumer purchases of services, partly from censuses that purport to be complete, and partly from sample data, is added. Interpolations are made for intercensal years.<sup>1</sup>

A similar indirect method is also used by Kuznets to estimate the volume of consumer perishable commodities (those lasting usually less than six months), semi-durable commodities (those lasting between six months and three years), and durable commodities.<sup>2</sup>

**24.** In computing the total of "gross national product" from national income, the Department of Commerce makes a minor adjustment that affects the total of consumer purchases. It adds to the national income the charges to bad-debt reserves that had been subtracted in computing the factor-payment (profits) in the course of computing national income.

The bad-debt problem, so far as national income accounting is concerned, divides into two parts. One relates to purchases by consumers; the other, to purchases by business firms.

The Commerce Department computations add back the bad-debt reserves on sales to consumers so that the total of gross national product will be consistent with the components. The component, consumer purchases, is defined so as to include the bad-debt element "to make our consumer expenditures residual equal to the goods and services the consumer receives rather than those he actually pays for."<sup>3</sup>

This adjustment may be undesirable if the various components of one year's total are being compared with one another; what the consumer receives must be measured in money terms, and to the extent that he never pays for what he gets he must be considered as buying

<sup>1</sup> See William H. Shaw, "The Gross Flow of Finished Commodities and New Construction, 1929-41," *Survey of Current Business*, April, 1942; Edward F. Denison, "Consumer Expenditures for Selected Groups of Services, 1929-41," *ibid.*, October, 1942; William H. Shaw, "Consumption Expenditures, 1929-43," *ibid.*, June, 1944. See also Kuznets, *Commodity Flow and Capital Formation*, *passim*.

<sup>2</sup> *National Income and Its Composition, 1919-1938*, I, 283.

<sup>3</sup> Milton Gilbert, "U.S. National Income Statistics," *Economic Journal*, April, 1943, p. 79. See also Kuznets, *op. cit.*, II, 427-28.

at a lower price than is indicated by the price tag. But if product totals for two or more years are being compared, the adjustment is necessary if, as is likely, the deflating product-price index is in terms of prices charged with no discount for defaults by the purchasers.

Sales of professional services, however, are included on a net basis, after excluding bad-debt sales, because the sales value before deduction of bad debts, which is large in this instance, is difficult if not impossible to estimate.

Bad debts occurring on a sale by one business firm to another business firm must not be subtracted in computing the first firm's profits if, in computing the second firm's profits, the default is ignored. The two sides of the transaction must be entered on a consistent basis; otherwise total profits will be understated or overstated.<sup>1</sup>

**25.** Even when the totals in Table 19 are deflated by a price index — and the proper index to be used has been a matter of some dispute — the result appears to be that an all-time high for civilian expenditures on consumption was reached in the war years of 1943 or 1944. The Department of Commerce has estimated consumer expenditures for 1939–43 inclusive to be, respectively, in billions of 1939 dollars, 62, 65, 70, 69, and 71.<sup>2</sup> The Department data on consumer expenditures do not include consumption goods purchased by government for the use of the armed forces.

The relatively small part in total consumer expenditures played by durable goods (goods having a life of more than three years, like automobiles and washing machines) is shown by the 1941 data, when such goods, although reaching a peak for the 1930–44 period, accounted for only \$9 billion out of \$75 billion. Their total fell to \$6 billion in 1942, in current dollars. Purchases of houses are not included in these totals of consumer expenditures,<sup>3</sup> nor are the net imputed rent, the depreciation, and the real estate taxes, for owner-occupied dwellings.

Expenditure on services was \$25 billion in 1941, and increased to only \$31 billion in 1944. Expenditure on non-durable goods increased

<sup>1</sup> Milton Gilbert, "Measuring National Income as Affected by the War," *Journal of the American Statistical Association*, June, 1942, p. 193.

<sup>2</sup> Milton Gilbert and George Jaszi, "National Income and National Product in 1942," *Survey of Current Business*, March, 1943, p. 14. Kuznets presents a deflated series of flow of goods to consumers, in 1929 dollars, for the total and each sub-total, in *National Product since 1869*, p. 24.

<sup>3</sup> For a total including housing, see Doris P. Warner and Albert R. Koch, "Estimated Durable Goods Expenditures, 1939–45," *Federal Reserve Bulletin*, September, 1946.

during the same war period by a greater absolute amount and a greater percentage amount, from \$40 billion in 1941 to \$60 billion in 1944.

**26.** Owing to the lack of underlying data, the estimates of consumer expenditures are not close enough to accuracy to support refined conclusions concerning changes in rate of change from year to year. Thus, the fact that the \$4.9 billion increase from 1933 to 1934 was about an 11 per cent increase and the \$4.5 billion increase from 1934 to 1935 was about a 9 per cent increase may be taken as established for most purposes of economic analysis; but to compare the \$4.9 billion increase with the \$4.5 billion increase and to conclude that the increase in 1933-34 was 9 per cent more than that from 1934 to 1935 is to obtain an answer that is exposed to a large percentage error. Similarly, the data do not warrant close comparison of changes in consumer expenditures with changes in the total of national income for the same year. To compute the \$4.9 billion increase (1933-34) as a percentage of, for example, the \$9 billion increase in gross national product for the same years (\$54.8 billion to \$63.8 billion) is to obtain an answer that is liable to a wide margin of error. The result, 54 per cent, could easily be, say, only half as much. For example, let the true figure for gross national product for 1934 be \$65.5 billion (instead of \$63.8 billion) and that for consumer expenditures be \$45.7 billion (instead of \$47.7 billion). The percentage above then becomes 27, instead of 54.

As direct estimates of the various categories of consumer purchases increase, the data may support analyses in terms of change in rate of change. A recent addition to the series is Harold Barger's direct estimate of consumer services;<sup>1</sup> the Department of Commerce is also continuing work on its direct estimate of consumer services.

#### IV. GOVERNMENT PURCHASES

**27.** Goods and services purchased by government are treated in the Department of Commerce series (Table 21) as final products, including both current and capital items. All the goods and services purchased by government disappear from the national income accounts, once they are taken by the government; it is as if the government were an "ultimate consumer." Consequently, the total expenditures by government, including outlays on schoolhouses, highways,

<sup>1</sup> Harold Barger, *Outlay and Income in the United States, 1921-1938*, chap. 4 and Appendix A.

TABLE 21  
Government Purchases of Goods and Services, United States, 1929-46 (Commerce) <sup>a</sup>

[in billions of current dollars]

| Year | Total Government Expenditures |  | Federal Government Expenditures |                      |                            |   | State and Local Expenditures |   |
|------|-------------------------------|--|---------------------------------|----------------------|----------------------------|---|------------------------------|---|
|      | Absolute Amount               | Per Cent of "Net National Product" (Commerce) <sup>b</sup> | War Expenditures                | Non-War Expenditures | Total Federal Expenditures |   | Absolute Amount              | Per Cent of Total Government Expenditures |
|      |                               |  |                                 |                      | Absolute Amount            | Per Cent of Total Government Expenditures |                              |   |
| 1929 | \$ 11.0                       | 11.9   | .                               | ..                   | \$2.7                      | 24.5                                      | \$8.3                        | 75.5                                      |
| 1930 | 11.2                          | 13.8   | .                               | ..                   | 2.4                        | 21.4                                      | 8.8                          | 78.6                                      |
| 1931 | 11.5                          | 17.6   | .                               | ..                   | 2.8                        | 24.3                                      | 8.7                          | 75.7                                      |
| 1932 | 10.2                          | 20.7   | ..                              | ..                   | 2.4                        | 23.5                                      | 7.8                          | 76.5                                      |
| 1933 | 9.1                           | 18.6   | ..                              | ..                   | 2.6                        | 28.6                                      | 6.5                          | 71.4                                      |
| 1934 | 10.8                          | 18.7   | ..                              | ..                   | 4.9                        | 45.4                                      | 5.9                          | 54.6                                      |
| 1935 | 11.9                          | 18.3   | .                               | ..                   | 3.9                        | 32.8                                      | 8.0                          | 67.2                                      |
| 1936 | 12.6                          | 16.7   | ..                              | ..                   | 4.6                        | 36.5                                      | 8.0                          | 63.5                                      |
| 1937 | 13.6                          | 16.7   | ..                              | ..                   | 6.1                        | 44.9                                      | 7.5                          | 55.1                                      |
| 1938 | 14.4                          | 19.4   | ..                              | ..                   | 6.8                        | 47.2                                      | 7.6                          | 52.8                                      |
| 1939 | 16.0                          | 19.4   | \$1.4                           | \$6.5                | 7.9                        | 49.4                                      | 8.1                          | 50.6                                      |
| 1940 | 16.7                          | 18.4   | 2.8                             | 6.1                  | 8.8                        | 52.7                                      | 7.9                          | 47.3                                      |
| 1941 | 26.5                          | 23.4   | 13.3                            | 5.3                  | 18.6                       | 70.2                                      | 7.9                          | 29.8                                      |
| 1942 | 62.7                          | 43.3   | 50.3                            | 5.0                  | 55.3                       | 88.2                                      | 7.4                          | 11.8                                      |
| 1943 | 93.5                          | 52.1   | 81.3                            | 4.9                  | 86.2                       | 92.2                                      | 7.4                          | 7.8                                       |
| 1944 | 97.1                          | 51.3   | 83.7                            | 5.7                  | 89.5                       | 92.2                                      | 7.7                          | 7.9                                       |
| 1945 | 83.6                          | 43.7   | 69.4                            | 6.3                  | 75.8                       | 90.7                                      | 7.9                          | 9.4                                       |
| 1946 | 34.7                          | 18.6   | 16.2                            | 8.9                  | 25.2                       | 72.6                                      | 9.5                          | 27.4                                      |

<sup>a</sup> Survey of Current Business, May, 1942, p. 12; Table 2 (1929-38); April, 1944, p. 13, Table 10 (1939-40); February, 1946, p. 8, Table 6 (1941-44); February, 1947, p. 7, Table 1 (1945-46).  
<sup>b</sup> Computed from Table 18, last column.



and other durable assets, form one item in the list making up the "gross national product" of the Commerce Department. Depreciation on government property is therefore not deducted in computing national income.

In the Commerce series, the total of goods and services purchased by government is used to measure "the product of government activities," since the product is valued at what it costs. "Purchases of services" by the government includes government payrolls and (until the revision in concept made in 1946) interest on the public debt (Chapter 7, § 68).

There are excluded from the "government purchases" series: (a) all government outlays that are neither income nor "income payments" to the recipient: return of capital by the government, advance of capital by the government (net prepayments), tax refunds, net payments by the government on renegotiation (usually negative), purchase of "existing assets" (that is, assets like real estate not recorded in volume of sales by private concerns); (b) all government outlays that are income payments, but of the transfer type only, and hence not included in national income or gross national product: relief, veterans' pensions, and allowances to soldiers' dependents<sup>1</sup>; (c) intergovernmental transfers to social security and other trust accounts. The total of "government purchases" also excludes, in general, purchases of goods that are resold by the government for a price, as when the liquor monopoly of a state government purchases and resells liquor. The product, liquor, is included in the total of purchases by consumers.<sup>2</sup>

The term "existing assets," in group (a) above, is narrowly construed. It does not comprise assets like steel bars, writing paper, or army uniforms, the purchase of which is accompanied by a decrease in inventories of private firms. Purchases of such assets by the government must be included in "government purchases" if national income is not to be understated. When the government purchases land or buildings, on the other hand, no one's inventory is recorded as decreasing, unless, perhaps, he is a dealer in real estate (§ 3).

There are included in the "government purchases" series the following outlays that do not appear in the budget proper: (d) the net ex-

<sup>1</sup> In the new Commerce series, allowances to soldiers' dependents are included in national income (military pay, in the wages and salaries category).

<sup>2</sup> Government purchase and resale are discussed in Richard Stone, "Two Studies on Income and Expenditure in the United States," *Economic Journal*, April, 1943, pp. 64-66.

penditures of government corporations (not counting loan transactions) and (e) the addition to federal salaries and wages in the form of the government's contribution to the employees' retirement fund.

The resulting net figure represents purchases of goods and services produced during the same year or drawn from inventory or imported.<sup>1</sup>

Subsidies have been included in government expenditures,<sup>2</sup> but are to be excluded in the new Commerce series. This issue is discussed in Chapter 7, § 59.

For the total of purchases by the federal government, the *Daily Treasury Statement* is the chief source of information.<sup>3</sup>

Purchases by state and local governments have been estimated indirectly. Data for receipts are available in many cases when expenditure data are not. Hence receipts are added to the net change in debt,<sup>4</sup> to ascertain total expenditures. However, the Commerce Department is now completing a direct estimate of state and local expenditures.

Federal grants to states and localities are included in federal expenditures and omitted from state and local receipts. Therefore, an equal amount of actual purchases by state and local governments is in fact credited to the federal account.<sup>5</sup>

**28.** The high levels of government expenditure in the nineteen-forties reflect, of course, the huge purchases of munitions, ships, and other implements of war, and the purchase of services of members of the armed forces (service pay and allotments to servicemen's families). The war expenditures also include all of the government's expenditures on food, clothing, and shelter for the armed forces.

The government pays the members of its armed forces partly in money, and partly in kind, since it supplies them with subsistence (food, clothing, shelter) free of charge. This payment in kind is a short-circuiting of the money-flow process. Economically, the situation is the same as if the government paid the soldier more in cash, and he

<sup>1</sup> See *Survey of Current Business*, March, 1943, p. 25, Table A, and notes to Table 6 and Table A; and April, 1944, p. 9, Table A. "Offshore expenditures" were also deducted in the 1943 issue, but not in the 1944 issue. The series covers 1939 to 1943. In terms of the line numbers in Table A in the 1944 issue, the items listed in category (a) of the text above, in the order there given, are found on lines 16, 13, 17, 13, 13; in category (b), lines 18 and 24, and 13a; in category (c), line 19; in category (d), 12 and 21; in category (e), line 20.

<sup>2</sup> *Survey of Current Business*, March, 1943, p. 25, general note to Tables A and B.

<sup>3</sup> *Survey of Current Business*, May, 1942, p. 13.

<sup>4</sup> *Idem*.

<sup>5</sup> "Duplication because of local shares of state-collected taxes has been eliminated." *Idem*.

then spent the extra cash in buying food and other items of subsistence from the government. There is in principle a "government purchase" item and in addition a "consumer expenditure" item. But both are condensed into one term, "payment of subsistence in kind," when the money flow is short-circuited. Then, if the government gives a soldier food worth \$100, the implication should be that national income is \$100 (soldier's services), consumer (soldier's) expenditure is \$100, government purchases (of soldiers' services) is \$100, and the inventory of the government's vendor declines \$100.

Until 1942, Commerce compiled its data on this basis, but owing largely to misunderstanding of this procedure on the part of the users of the data, it decided later to include such payments in kind only in "government purchases," not also in consumer expenditures and factor incomes.<sup>1</sup>

29. Kuznets, as noted in § 19, does not include a total of government purchases in his product series. The only government product entered specifically as such is the total of construction by or at the order of the government.<sup>2</sup> This includes construction done directly by the government with its own employees ("own force account" construction, or, briefly, "force account"), and construction done on order of the government by private contractors.

The total of construction does not, of course, include all expenditures by the government the benefits of which might be considered to last beyond the year.

Construction by or at the order of the government for the years 1919-43 together with estimates of depreciation of government property (other than streets, roads, highways, and sewers)<sup>3</sup> for 1919-38, and hence a net construction estimate for those years, are given in Table 22.

30. The Securities and Exchange Commission research staff, in estimating government saving as a component of total saving (Chap-

<sup>1</sup> Milton Gilbert, "U.S. National Income Statistics," *Economic Journal*, April, 1943, pp. 80-81. A return to the former procedure is now indicated. See Edward F. Denison, "Report on Tripartite Discussions of National Income Measurement," *Studies in Income and Wealth*, X, p. I-10 (mimeograph).

<sup>2</sup> Except for 1939-43, for which years he provides an alternative concept of national income ("wartime concept") that includes all government expenditures for war. (*National Product since 1869*, p. 14).

<sup>3</sup> A critical evaluation of this omission is given in Wendell D. Hance, "Adequacy of Estimates Available for Computing Net Capital Formation," *Studies in Income and Wealth*, VI, 268.

TABLE 22  
Public Construction, United States, Gross, 1919-43, and  
Net, 1919-38 (Kuznets and Commerce)

(in billions of current dollars)

| Year | Gross Public Construction    |  | Depreciation on Public Structures except Roads and Sewers <sup>c</sup> | Net Public Construction      |  |
|------|------------------------------|--|--|------------------------------|--|
|      | Absolute Amount <sup>a</sup> | Per Cent of Gross National Product (Commerce) <sup>b</sup> |  | Absolute Amount <sup>d</sup> | Per Cent of National Income (Kuznets) <sup>e</sup> |
| 1919 | \$2.0                        | 3  | \$0.8  | \$1.2                        | 2  |
| 1920 | 1.3                          | 1.5  | 1.0  | 0.3                          | f  |
| 1921 | 1.6                          | 2  | 0.8  | 0.8                          | 1  |
| 1922 | 1.7                          | 2  | 0.7  | 1.0                          | 2  |
| 1923 | 1.6                          | 2  | 0.9  | 0.7                          | 1  |
| 1924 | 1.9                          | 2  | 0.9  | 1.0                          | 1  |
| 1925 | 2.1                          | 2  | 0.9  | 1.2                          | 2  |
| 1926 | 2.1                          | 2  | 0.9  | 1.2                          | 1.5  |
| 1927 | 2.4                          | 3  | 0.9  | 1.5                          | 2  |
| 1928 | 2.5                          | 3  | 0.7  | 1.8                          | 2  |
| 1929 | 2.4                          | 2  | 0.7  | 1.7                          | 2  |
| 1930 | 2.8                          | 3  | 0.7  | 2.1                          | 3  |
| 1931 | 2.6                          | 4  | 0.7  | 1.9                          | 3  |
| 1932 | 1.8                          | 3  | 0.7  | 1.1                          | 2.5  |
| 1933 | 1.2                          | 2  | 0.7  | 0.5                          | 1  |
| 1934 | 1.5                          | 2  | 0.8  | 0.7                          | 1  |
| 1935 | 1.4                          | 2  | 0.8  | 0.6                          | 1  |
| 1936 | 2.2                          | 3  | 0.9  | 1.3                          | 2  |
| 1937 | 2.0                          | 2  | 1.1  | 0.9                          | 1  |
| 1938 | 2.1                          | 3  | 1.2  | 0.9                          | 1  |
| 1939 | 2.4                          | 3  | g  |                              |  |
| 1940 | 2.7                          | 3  | g  |                              |  |
| 1941 | 5.4                          | 4.5  | g  |                              |  |
| 1942 | 10.7                         | 7  | g  |                              |  |
| 1943 | 6.2                          | 3  |  |                              |  |

<sup>a</sup> Kuznets, *National Product since 1869*, p. 40, Table I-7, col. 5, and *Survey of Current Business*, June, 1943, p. 32, Table 11, and June, 1944, p. 23, Table 5. Kuznets uses the same source-data as the Department of Commerce. The Commerce series presents a detailed breakdown, including among other separate items one for government residential construction, which reached a maximum of \$685 million in 1943. Data for years beyond 1943 have not yet been published.

<sup>b</sup> For 1919-28, computed from estimates of gross national product under the Commerce Department concept by Mary S. Painter, "Estimates of Gross National Product, 1919-1928," *Federal Reserve Bulletin*, September, 1945, pp. 872-73.

<sup>c</sup> Kuznets, *op. cit.*, p. 53, Table I-16.

<sup>d</sup> Column 1 less column 3.

<sup>e</sup> Computed from Kuznets, *National Income and Its Composition, 1919-1938*, I, 137, Table 1.

<sup>f</sup> Less than one half of 1 per cent.

<sup>g</sup> Not reproduced here; see note 4, p. 157.

ter 8, § 17), have estimated "capital outlays" by the state and local governments and, for the federal government, "public works" and "capital outlay of WPA, CWA, and CCC." Depreciation on government assets has also been estimated. The sources are for the most part those utilized by the Department of Commerce or Kuznets. The net estimates do not differ greatly from those shown by Kuznets, though they are steadily higher, since the concept of "capital outlay" is broader than "construction."<sup>1</sup>

The Federal Reserve Board has also compiled a series of public expenditures on durable goods.<sup>2</sup>

## V. NET CHANGE IN INVENTORIES

**31.** If a business concern ends the year with a larger inventory than it had at the start of the year, this increase must be counted in the national income. Otherwise the total product of the year's activity will be understated. And if the year-end inventory is smaller, the difference must be entered as a minus item if the total product of the year is not to be exaggerated.

Estimates of year-end inventories are obtained chiefly from data on corporations in *Statistics of Income*. For unincorporated enterprises, the biennial *Census of Manufactures* and the less reliable and somewhat less frequent *Wholesale Census* and *Retail Census* are the basic sources.<sup>3</sup>

The annual changes in inventories as obtained from these sources are adjusted both by Kuznets and (only for gross national product) by the Commerce Department to put the changes on a current-price basis, (as discussed in Chapter 5, § 39 ff.) The adjustment obtains a result like the one that would be obtained if all concerns used a "last-in first-out" method of inventory accounting.<sup>4</sup> The aim is to measure the value of the physical change in inventories, eliminating elements

<sup>1</sup> Estimates for the years 1933-37 and description of methods are given by R. W. Goldsmith and Walter Salant in "The Volume and Components of Saving in the United States, 1933-1937," *Studies in Income and Wealth*, III, 285-93.

<sup>2</sup> Doris P. Warner and Albert R. Koch, "Estimated Durable Goods Expenditures, 1939-45," *Federal Reserve Bulletin*, September, 1946.

<sup>3</sup> Wendell D. Hance, "Estimates of Annual Business Inventories, 1928-41," *Survey of Current Business*, September, 1942. See also Louis J. Paradiso, "Retail Inventories in the War Period," *ibid.*, March, 1944.

<sup>4</sup> The figures as reported were "deflated by price indexes representing the lower of cost or market and the deflated series were multiplied by current-price indexes. . . ." *Survey of Current Business*, May, 1942, p. 13, note 13 to Table 2. Farm inventories are computed by the Bureau of Agricultural Economics, giving changes in physical quantities at current prices. *Idem*.

TABLE 23  
Net Change in Inventories, United States, 1919-46  
(Kuznets and Commerce)

(in billions of current dollars)

| Year | After Adjustment     |                       |  |  | Before Adjustment    |                       |
|------|----------------------|-----------------------|--|--|----------------------|-----------------------|
|      | Absolute Amount      |                       | Per Cent of                            |  | Kuznets <sup>e</sup> | Commerce <sup>f</sup> |
|      | Kuznets <sup>a</sup> | Commerce <sup>b</sup> | National Income (Kuznets) <sup>c</sup> | Net National Product (Commerce) <sup>d</sup> |                      |                       |
| 1919 | \$4.0                |                       | 6                                      |  | \$5.9                |                       |
| 1920 | 7.3                  |                       | 10                                     |  | 3.0                  |                       |
| 1921 | 0.15                 |                       | g                                      |  | -6.4                 |                       |
| 1922 | 0.6                  |                       | 1                                      |  | 1.6                  |                       |
| 1923 | 3.1                  |                       | 4                                      |  | 3.2                  |                       |
| 1924 | -0.9                 |                       | -1                                     |  | -1.1                 |                       |
| 1925 | 1.8                  |                       | 2                                      |  | 2.1                  |                       |
| 1926 | 1.6                  |                       | 2                                      |  | -0.3                 |                       |
| 1927 | 0.45                 |                       | 1                                      |  | -0.5                 |                       |
| 1928 | -0.34                |                       | g                                      |  | -0.4                 |                       |
| 1929 | 2.4                  | \$1.6                 | 3                                      | 1.7  | 1.6                  | \$1.1                 |
| 1930 | -1.1                 | -0.3                  | -1                                     | -0.4   | -5.3                 | -4.0                  |
| 1931 | -1.3                 | -2.0                  | -2                                     | -3.1   | -4.0                 | -4.8                  |
| 1932 | -2.4                 | -2.3                  | -5.6                                   | -4.7   | -3.8                 | -3.5                  |
| 1933 | -1.1                 | -0.7                  | -3                                     | -1.4   | .5                   | 1.2                   |
| 1934 | -1.7                 | -0.1                  | -3                                     | -0.2   | 0.2                  | 0.8                   |
| 1935 | 1.3                  | 0.2                   | 2                                      | 0.3  | 1.3                  | 0.8                   |
| 1936 | 2.5                  | 2.2                   | 4                                      | 2.9  | 1.5                  | 2.5                   |
| 1937 | 2.5                  | 1.1                   | 3.5                                    | 1.3  | 3.1                  | 1.8                   |
| 1938 | -0.27                | -1.3                  | g                                      | -1.7   | 2.0                  | -2.2                  |
| 1939 |                      | 0.9                   |  | 1.1  |                      | 1.3                   |
| 1940 |                      | 1.8                   |  | 2.0  |                      | 2.2                   |
| 1941 |                      | 3.5                   |  | 3.1  |                      | 6.7                   |
| 1942 |                      | -0.5                  |  | -0.3   |                      | 1.6                   |
| 1943 |                      | -0.6                  |  | -0.3   |                      | -0.4                  |
| 1944 |                      | -1.7                  |  | -0.9   |                      | -1.6                  |
| 1945 |                      | -0.6                  |  | g  |                      | -0.6                  |
| 1946 |                      | 6.5                   |  | 3.5  |                      | 10.0                  |

<sup>a</sup> Kuznets, *National Product since 1869*, p. 46, Table I-11. Includes, for all years, changes in stocks of monetary metals.

<sup>b</sup> *Survey of Current Business*, May, 1942, p. 12, Table 2 (1929-38); April, 1944, p. 13, Table 10, and p. 14, Table 13 (1930-40); February, 1946, p. 8, Table 6 (1941-44); and February, 1947, p. 7, Table 1 (1945-46).

<sup>c</sup> Computed from Table 6. <sup>d</sup> Computed from Table 18.

<sup>e</sup> Kuznets, *National Income and Its Composition, 1919-1938*, II, 903-10, Table VII, plus farm-inventory change after adjustment, Kuznets, *National Product since 1869*, p. 46, Table I-11.

<sup>f</sup> See note *b*. Obtained by adding to the amount after adjustment the figure given for revaluation. For the years 1929-41 the *Survey of Current Business*, May, 1942, p. 12, Table 4 presents revaluation estimates separately for corporations and other enterprises.

<sup>g</sup> Less than one half of 1 per cent.

of change in value of a given physical amount of inventory.<sup>1</sup>

The striking difference made by the adjustment in years of substantial price changes is evident from Table 23. In 1921, for example, the data, unadjusted except for farms, show \$6 billion disinvestment in inventories. But in physical terms there was practically no net change at all. During the three years 1930-32 inventories decreased by \$13 billion (Kuznets) on the books of business concerns, but only by \$5 billion in current prices. Commerce Department data show a similar difference, though on a somewhat smaller scale.

**32.** In the national income accounts of the United States, annual net investment in the form of inventory has usually been a small figure. During the course of a year a vast amount of investment in inventory occurs. Most of it, however, is accompanied or followed shortly by disinvestment of inventory as goods are sold to consumers, or to the government, or to another business firm either on "expensed" purchases (Chapter 2, § 6) or on purchases of capital equipment, or are exported. These goods are no longer recorded as inventory anywhere.

## VI. NET CHANGE IN PRIVATELY OWNED DEPRECIABLE AND OTHER DURABLE ASSETS

**33.** Business assets that are not inventoried consist of (a) money and money claims and (b) durable assets like buildings, machinery, good will, and patent rights. Money and money claims are not counted in the "product" total, for reasons given above (Chapter 2, § 3). Patent rights, promotional benefits in the formation of business enterprises,<sup>2</sup> and other non-representative intangibles are omitted owing to difficulty of compilation. The other assets are divided between "construction" and "producers' durable equipment." The amount of construction during the year, plus the producers' durable equipment produced during the year, minus depreciation and depletion charges, gives an element in the net product. If depreciation and depletion charges are not taken into account, the resulting gross figure is an element in the gross national product.<sup>3</sup>

<sup>1</sup> Milton Gilbert and R. B. Bangs, "Preliminary Estimates of Gross National Product, 1929-41," *Survey of Current Business*, May, 1942, pp. 10-11.

<sup>2</sup> See Clark Warburton, "Accounting Methodology in the Measurement of National Income," *Studies in Income and Wealth*, I, 102-04.

<sup>3</sup> A critical discussion of the concepts of capital formation and capital consumption as developed by Kuznets and Fabricant is given in Wendell D. Hance, "Adequacy of Estimates Available for Computing Net Capital Formation," *Studies in Income and Wealth*, VI, 238-47.

TABLE 24

## Private Residential Construction, Gross and Net, United States, 1919-38 (Kuznets and Fabricant)

(in billions of current dollars)

| Year | Private Residential<br>Gross Construction,<br>Farm and Non-Farm <sup>a</sup> | Depreciation on Farm<br>and Non-Farm Private<br>Residential Property <sup>b</sup> | Net Private Residential<br>Construction <sup>c</sup> |
|------|--|---|--|
| 1919 | 1.9  | 2.1   | -0.2   |
| 1920 | 1.8  | 2.7   | -0.9   |
| 1921 | 1.9  | 1.9   | 0  |
| 1922 | 3.0  | 1.8   | 1.2  |
| 1923 | 3.9  | 2.1   | 1.8  |
| 1924 | 4.5  | 2.1   | 2.4  |
| 1925 | 4.8  | 2.1   | 2.7  |
| 1926 | 4.8  | 2.2   | 2.6  |
| 1927 | 4.5  | 2.3   | 2.2  |
| 1928 | 4.1  | 2.4   | 1.7  |
| 1929 | 3.7  | 2.5   | 1.2  |
| 1930 | 1.9  | 2.4   | -0.5   |
| 1931 | 1.6  | 2.1   | -0.5   |
| 1932 | 0.7  | 1.8   | -1.1   |
| 1933 | 0.5  | 1.8   | -1.3   |
| 1934 | 0.7  | 1.9   | -1.2   |
| 1935 | 1.0  | 1.9   | -0.9   |
| 1936 | 1.5  | d   | d  |
| 1937 | 1.8  | d   | d  |
| 1938 | 1.9  | d   | d  |

<sup>a</sup> Kuznets, *National Product since 1869*, p. 40, Table I-7.<sup>b</sup> Solomon Fabricant, *Capital Consumption and Adjustment*, Table 31, pp. 170-71; or Simon Kuznets, *Commodity Flow and Capital Formation*, p. 494, Table VIII-3, line 6.<sup>c</sup> By subtraction, column 2 from column 1.<sup>d</sup> Not available.

The term "money claims" is taken here to include deferred charges like prepaid insurance, reflecting payments for which no productive activity has yet occurred.

Neither Kuznets nor the Department of Commerce has published a series of annual estimates of net change in private structures and other durable assets. The Commerce Department has refrained from computing such a net series on the ground that its depreciation and depletion figures are not comparable in scope to its data on gross construction and durable equipment, and are too arbitrary anyway



TABLE 25  
Private Non-Residential Construction and Producers' Durable  
Equipment, Gross and Net, United States, 1919-38  
(Kuznets and Fabricant)

(in billions of current dollars)

| Year | Gross <sup>a</sup> | Depreciation and<br>Depletion <sup>b</sup> | Net <sup>a</sup> |
|------|--------------------|--|------------------|
| 1919 | 8.2                | 6.1  | 2.1              |
| 1920 | 9.1                | 7.0  | 2.1              |
| 1921 | 6.2                | 5.3  | 0.9              |
| 1922 | 6.4                | 5.1  | 1.3              |
| 1923 | 8.8                | 5.8  | 3.0              |
| 1924 | 8.5                | 5.8  | 2.7              |
| 1925 | 9.4                | 5.9  | 3.5              |
| 1926 | 10.4               | 6.4  | 4.0              |
| 1927 | 10.0               | 6.4  | 3.6              |
| 1928 | 10.3               | 6.5  | 3.8              |
| 1929 | 11.7               | 7.0  | 4.7              |
| 1930 | 9.3                | 6.6  | 2.7              |
| 1931 | 5.8                | 5.9  | -0.1             |
| 1932 | 3.1                | 5.2  | -2.1             |
| 1933 | 2.9                | 4.8  | -1.9             |
| 1934 | 3.8                | 5.1  | -1.3             |
| 1935 | 4.8                | 5.2  | -0.4             |
| 1936 | 6.2                | d  | d                |
| 1937 | 7.8                | d  | d                |
| 1938 | 5.7                | d  | d                |

<sup>a</sup> Kuznets, *National Product since 1869*, p. 36, Table I-6, column 2, plus p. 40, Table I-7, column 4.

<sup>b</sup> Kuznets, *op. cit.*, p. 53, Table I-16, column 1, minus the depreciation on residential property (Table 24 above).

<sup>c</sup> By subtraction.

<sup>d</sup> Not available.

(see § 34 and the reference there cited). Kuznets has published estimates of construction, of production of producers' durable equipment, and of depreciation; these series, when combined, yield a series of net capital formation in structures and producers' durable equipment. Tables 24 and 25 present such a series in two parts: net residential construction (Table 24) and net private non-residential construction plus producers' durable equipment.<sup>1</sup> Table 26 goes so far as to ignore

<sup>1</sup> The total of these two parts can also be derived in another way, from Tables I-11 and I-17, in Kuznets' *National Product since 1869*, by subtracting the sum of net changes in

the inconsistencies noted by the Commerce Department, computing from its series a roughly net series of private construction and producers' durable equipment.

#### A. Private Construction

**34.** The Commerce Department series on annual private construction (Table 26) includes "all new private construction of factory and public utility property, residences, and other property (including non-profit institutions and farm construction)." It excludes construction by or for the government; this item is shown in Table 22, and is included in the series, "purchases by government" (Table 21).

Private construction cannot be computed as a percentage of net national product. Only the net increase in construction, after subtracting depreciation on existing structures, could be so computed, and depreciation data are not available from Commerce Department figures for structures alone. Private construction can be expressed as a percentage of gross national product. If the estimates of private construction are combined with those on production of producers' durable equipment, and if total depreciation and depletion are subtracted, as is done in Table 26, the resulting figure tends to be an overstatement of net private construction plus other durable assets. First, the Commerce Department total of depreciation includes no estimate of depreciation of owner-occupied homes. Suppose that there are twenty such houses wearing out and being replaced one a year at a cost of \$10,000. Each year the depreciation is \$500 a house, or \$10,000. If interest is ignored, the national income for each year is \$10,000 (factor payments to those who build the house); gross capital outlay is \$10,000; net capital outlay (net investment) is zero; consumption (using up of houses) is \$10,000. The Commerce Department computations show the national income (factor approach) to be \$10,000, and the gross capital outlay to be \$10,000, but neither the factor approach nor the product approach contains an item for depreciation of the houses. Consequently, if from the gross capital outlay total (\$10,000) there is subtracted the depreciation total actually recorded by the owners (zero), the result (\$10,000) is too large

inventories and net changes in claims against foreign countries from total net capital formation, and then deducting the excess of public construction over public capital consumption. The resulting totals check with the sum of the totals in Tables 24 and 25, within one tenth of a billion dollars in every case. For 1936-38 the totals are, in billions of dollars, 0.2, 1.3, -0.8.

to be called the net investment for the year, which is, in fact, zero. No item "consumption (of owner-occupied houses)," appears in the Commerce Department product approach. In summary, the Department procedure tends to an overstatement of net capital outlay and an understatement of consumption if the reader attempts to derive a net capital outlay from the Department data — a feat that the Department itself does not attempt, and, in fact, warns against.<sup>1</sup> Even if this attempt is not made, the understatement of consumption remains, since the Commerce Department does present a total for consumption, or, rather, consumer expenditures on goods and services.

Second, the Commerce Department treatment of the buildings of private non-profit organizations gives rise to the same problem as that sketched immediately above. On the product side the construction of such buildings is included. On the factor side no depreciation is entered.<sup>2</sup>

**35.** Of course it would not be enough merely to enter on the product side a minus item for depreciation of these owner-occupied houses and non-profit institutions. This treatment would understate the national income. The depreciation is not a dead loss. It is offset, at least in part, and probably more than offset, by a positive product entry, consumption of housing, which is measured by the imputed rental value of the house.

**36.** The construction estimates for 1929–41 by the Commerce Department are subdivided by major categories of industry, but the methods used in compiling the estimates have not yet been published.<sup>3</sup>

**37.** The data on construction in the first two columns of Table 26 are, of course, not comparable with the data on change in inventory in Table 23. The latter are on a net basis; that is, they measure the change in stock on hand from year-beginning to year-end. The year's figure may, therefore, be negative.

A positive figure in the inventory-change series signifies that enough was produced during the year not only to meet all consumer purchases and government purchases, purchases by firms for expensed or capitalized outlays, and net exports, but also to add to inventories an amount shown by that figure. A positive figure in the construction series, on the other hand, does not necessarily mean that the amount of buildings

<sup>1</sup> Milton Gilbert, "U.S. National Income Statistics," *Economic Journal*, April, 1943, p. 77.

<sup>2</sup> *Ibid.* But in the forthcoming revised series, services of non-profit organizations will be valued at current expense, including depreciation.

<sup>3</sup> *Survey of Current Business*, February, 1942, p. 36.

TABLE 26

Private Construction and Producers' Durable Equipment, Gross, 1919-46 (Kuznets and Commerce) and Net,  
1929-46 (Commerce), United States

(in billions of current dollars)

| Year | Total Private<br>Construction <sup>a</sup> | Non-Residential<br>Private<br>Construction <sup>c</sup> | Producers' Durable Equipment <sup>d</sup> |                       | Private Con-<br>struction and<br>Producers' Durable<br>Equipment <sup>h</sup> | Depreciation<br>and Depletion<br>Charges <sup>i</sup> | Net Increase in Stock of Private<br>Structures and Producers' Durable<br>Equipment |   |
|------|--|---|---|-----------------------|---|---|--|---|
|      |  |   | Kuznets <sup>e</sup>                      | Commerce <sup>f</sup> |   |   | Absolute<br>Total <sup>j</sup>   | Per Cent of Net<br>National<br>Product <sup>k</sup> |
| 1919 | \$3.9                                      | \$2.0   | \$6.2                                     |                       |   |   |  |   |
| 1920 | 4.7  | 2.8   | 6.3                                       |                       |   |   |  |   |
| 1921 | 4.0  | 2.2   | 4.0                                       |                       |   |   |  |   |
| 1922 | 5.3  | 2.3   | 4.1                                       |                       |   |   |  |   |
| 1923 | 6.9  | 3.0   | 5.8                                       |                       |   |   |  |   |
| 1924 | 7.6  | 3.1   | 5.4                                       |                       |   |   |  |   |
| 1925 | 8.3  | 3.5   | 5.9                                       |                       |   |   |  |   |
| 1926 | 8.8  | 4.0   | 6.4                                       |                       |   |   |  |   |
| 1927 | 8.6  | 4.1   | 5.9                                       |                       |   |   |  |   |
| 1928 | 8.1  | 4.0   | 6.3                                       |                       |   |   |  |   |
| 1929 | 7.9  | 4.2   | 7.5                                       | \$7.3                 | \$15.2  | \$6.8   | \$8.4  | 9   |
| 1930 | 5.4  | 3.5   | 5.8                                       | 6.0                   | 11.4  | 6.9   | 4.5  | 6   |
| 1931 | 3.7  | 2.1   | 3.7                                       | 4.2                   | 7.9   | 6.7   | 1.2  | 2   |
| 1932 | 1.7  | 1.0   | 2.1                                       | 2.4                   | 4.1   | 6.2   | -2.1   | -4  |
| 1933 | 1.2  | 0.7   | 2.2                                       | 2.1                   | 3.3   | 6.0   | -2.7   | -6  |

|      |                  |                  |     |      |      |     |      |    |
|------|------------------|------------------|-----|------|------|-----|------|----|
| 1934 | 1.5              | 0.8              | 3.0 | 3.1  | 4.6  | 5.9 | -1.3 | -2 |
| 1935 | 1.9              | 0.9              | 3.9 | 4.0  | 5.9  | 5.9 | 0    | 0  |
| 1936 | 2.7              | 1.3              | 4.9 | 5.2  | 7.9  | 6.2 | 1.7  | 2  |
| 1937 | 3.5              | 1.7              | 6.1 | 6.3  | 9.8  | 6.1 | 3.7  | 5  |
| 1938 | 3.2              | 1.3              | 4.4 | 4.5  | 7.7  | 6.2 | 1.5  | 2  |
| 1939 | 3.9              | 1.4              | g   | 5.5  | 9.4  | 6.2 | 3.2  | 4  |
| 1940 | 4.6              | 1.7              | g   | 6.9  | 11.5 | 6.4 | 5.1  | 6  |
| 1941 | 5.5              | 2.2              | g   | 8.9  | 14.4 | 7.0 | 7.4  | 7  |
| 1942 | 2.9              | 1.3              | g   | 5.1  | 8.0  | 7.6 | 0.4  | m  |
| 1943 | 1.6              | 0.8              | g   | 3.1  | 4.7  | 8.0 | -3.3 | -2 |
| 1944 | 1.6 <sup>b</sup> | 1.1 <sup>b</sup> | g   | 4.0  | 5.6  | 8.2 | -2.6 | -1 |
| 1945 | 2.6 <sup>b</sup> | 1.9 <sup>b</sup> | g   | 6.6  | 9.2  | 8.0 | 1.2  | 1  |
| 1946 | 7.9 <sup>b</sup> | n                | g   | 12.8 | 20.7 | 7.2 | 13.5 | 7  |

<sup>a</sup> Kuznets, *National Product since 1869*, p. 40, Table I-7, for 1919-43; or, for 1929-43, *Survey of Current Business*, June, 1943, p. 32, Table 11 and June, 1944, p. 23, Table 5. Kuznets and Commerce Department use the same source. The figures in the annual reports on national income in the *Survey of Current Business* (which show private construction segregated into residential and non-residential for 1939 and the following years, starting with the March, 1943, issue) are slightly different for 1939, 1940, and 1941, because they are taken from an older (unrevised) series of estimates.

<sup>b</sup> *Survey of Current Business*, February, 1946, p. 8, Table 6, and February, 1947, p. 8, Table 1.

<sup>c</sup> See note <sup>a</sup>. The series in the annual reports on national income differ slightly for all the years 1939-43.

<sup>d</sup> "Producer durable commodities" (Kuznets).

<sup>e</sup> *National Product since 1869*, p. 36, Table I-6. Includes business use of passenger cars.

<sup>f</sup> *Survey of Current Business*, May, 1942, p. 12, Table 2 (1929-38); April, 1944, p. 13, Table 10 (1939-40); February, 1946, p. 8, Table 6 (1941-44); and February, 1947, p. 7, Table 1 (1945-46).

<sup>g</sup> See note <sup>d</sup>, p. 157 (§ 20). <sup>h</sup> Sum of columns 1 and 4.

<sup>i</sup> *Survey of Current Business*, May, 1942, p. 12, Table 1 (1929-38); April, 1944, p. 14, Table 13 (1939-40); February, 1946, p. 7, Table 5 (1941-44); and February, 1947, p. 8, Table 5 (1945-46).

<sup>j</sup> Difference between two immediately preceding columns.

<sup>k</sup> Computed from Table 18. A slight discrepancy is involved, because Table 26 uses revised data that differ slightly from those that go to make up the net national product totals in Table 18.

<sup>m</sup> Less than one half of 1 per cent.

<sup>n</sup> Not available.

and other structures on hand at the end of the year is any greater than it was at the beginning, since the structures have been depreciating during the year by an unknown amount. (Table 26 shows only total depreciation of structures and other private durable producers' commodities.)

#### B. Producers' Durable Equipment

**38.** The estimates of total producers' durable equipment in Table 26 are of equipment produced and sold to private users, or produced by the private producer for his own use. For the years 1929-39 estimates have been published for each of twenty-two types of equipment — factory machinery, tractors, business motor vehicles, and so on.<sup>1</sup> The estimates are made in the indirect manner already described for consumer purchases of commodities, in § 23.

During 1929-46, the amount of producers' durable equipment sold to or produced by users was higher than private construction in every year but one, 1929.

For the war years, 1941-45, the totals are somewhat ambiguous so far as the attribute "private" is concerned. Many plants built by or for the government (hence included in Table 22) were leased to private concerns and some, whether so leased or not, were later sold to private concerns. And some of the construction and purchase of durable equipment included in Table 26 was done on order, as it were, by the government, with a view to defense or war production.

The conventional nature of the depreciation and depletion charges must be recalled (Chapter 5, § 30). The amounts charged off each year may have little resemblance to actual changes in market value (so far as market value can be measured for factory buildings, machines, and so on), and even less resemblance to observable physical changes. These remarks apply with special force to the war years. Moreover, the data available on depreciation do not cover quite all the field that is included in the data on gross capital formation.<sup>2</sup>

**39.** Estimates of capital outlay on both plant and equipment for each of six manufacturing industry groups have also been published,

<sup>1</sup> For details see William H. Shaw, "The Gross Flow of Finished Commodities and New Construction, 1929-41," *Survey of Current Business*, April, 1942, p. 16, Table 2. These detailed data include, for 1940 and 1941, some government purchases and production.

<sup>2</sup> See Wendell D. Hance, "Adequacy of Estimates Available for Computing Net Capital Formation," *Studies in Income and Wealth*, VI. This paper also discusses gaps in the data on construction and producers' durable equipment.

thus providing a breakdown of part of the total on an industry basis, in contrast with the breakdown of the durable-equipment total on a type-of-equipment basis.<sup>1</sup>

In December, 1945, the Department of Commerce and the Securities and Exchange Commission initiated a quarterly series showing the expenditures for plant and equipment by private concerns (exclusive of agriculture) for the years 1939-41 and each subsequent quarter and presenting estimates of what would be spent in the current quarter.<sup>2</sup> The Federal Reserve Board also publishes a series of producers' expenditures on durable goods.<sup>3</sup>

## VII. NET CHANGE IN CLAIMS AGAINST NON-RESIDENTS

40. The analysis of international transactions covers three topics: the transfer of ownership of goods, and money claims, regardless of the physical location of the goods (§§ 40-42); the physical movement of the goods, exports and imports (§ 43); and the ways in which the purchaser obtains foreign money, if the seller wants to be paid in the money of his own country (§§ 44-46). The last topic includes a discussion of the adjustment of the total income produced in a region to obtain the total income received by the residents of a region (Chapter 1, § 1).

The resident owner of a non-money asset that forms part of the total of inventories — cotton cloth held by a textile mill, for example — may sell it to a non-resident. In principle, the asset thereupon disappears from the accounts of the nation. The transfer should be recorded as a minus item in computing net inventory increase. The cloth cannot reappear elsewhere in the accounts as being purchased for investment or consumption, for the purchaser is not one of the group whose aggregate income is being computed. If the disappearance of the asset is not to seem a dead loss, a record must be made of what the resident seller receives for parting with it. These remarks assume that the "national" income is being computed as the income of the residents of a geographic area, which is usually the case. If the computations are for a group of citizens, wherever they may reside, the terminology in the present analysis must be changed accordingly.

41. The money received from the non-resident may be a bank deposit in, or currency of, the country of the seller. A resident of

<sup>1</sup> Lowell J. Chawner, "Capital Expenditures in Selected Manufacturing Industries," *Survey of Current Business*, December, 1941.

<sup>2</sup> Press releases and issues of *Statistical Bulletin*, Securities and Exchange Commission.

<sup>3</sup> Warner and Koch, *loc. cit.*

Great Britain, holding a bank deposit in dollars in a bank in the United States, purchases some goods from a wholesaler in the United States. He pays the wholesaler by transferring the dollar bank deposit to him. The domestic money that the seller receives from the British resident is a real asset, from the viewpoint of the group of people living in the United States. By the transfer of the money, a claim that the non-resident was holding on the goods and services of the nation is canceled. The non-resident's claim was only a generalized one, a claim as yet unexercised, but real enough nonetheless. In the national income accounts of the United States, there has been no net disinvestment. The exchange of goods for money is here only a change in the form of real assets. The amount of commodities owned by residents of the United States has decreased, but there has occurred an increase in the amount of United States money that they hold compared to the amount held by non-residents. In principle, in the accounts of national income viewed from the product side, the item "net increase in inventories" should decline and a corresponding increase should be registered in a "product" item, "decrease in domestic-money claims held by non-residents." This decrease is equivalent to an increase in the real assets of the nation, conceived of as a group of residents, and hence may be counted as an investment. In this respect the definition of "investment" given in § 6 above and Chapter 2, § 3, needs to be enlarged.

In practice a mere transfer of ownership, from resident to non-resident, of inventories, or real estate, or anything else, is not recorded in the national income accounts; only when it is brought to light by the act of exporting is the "inventories" item marked down and some counterbalancing item ("exports," for example) entered. The change in ownership of the money will be noted in data covering the movements of short-term capital, but such movements cannot be included in the national income accounts unless it is known which of the other product components (inventory, producers' plant, and the like) should be decreased, and this information is usually unavailable.

**42.** The money received from the non-resident may be a bank deposit (or currency) in the buyer's country. A resident of Great Britain, holding a deposit in pounds sterling in a British bank, may transfer the sterling deposit to a United States wholesaler in purchasing commodities in the United States. The seller receives a real asset, from the point of view of his country, in the form of a money



claim against the output of goods and services in Great Britain. The group of people living in the United States has lost some commodities and acquired a generalized claim against British output. The results, for national income accounting, are the same as in § 41. In both cases the amount of money claims held by residents of Great Britain against United States output, compared with the amount of money claims held by United States residents against British output, has shifted in favor of the United States.

The money received by the resident seller may be a bank deposit in a third country; an Argentine purchaser may transfer to a United States vendor a pounds sterling deposit in London. Then Argentina's accounts show a decrease in money claims on other countries, the United States accounts show an increase, and the British accounts show no change in the item "domestic-money claims held by non-residents."

**43.** The Commerce Department does not use the phrase "change in money claims." Instead, it has a category, "net exports of goods and services." If the cotton cloth purchased by the British resident is in fact exported by him from the United States, the national income accounts will balance if the product total for the United States contains a "net exports" item. A positive entry here counterbalances the decline in domestic inventories. The term "exports" is then equivalent to a decrease in domestic-money claims held by non-residents or to an increase in foreign-money claims held by residents. Similarly, any import implies the reverse.

There is, of course, usually an interval, however short, between the moment of purchase and the moment when an export is recorded. For such a period, the entries suggested in § 41 apply in principle, but in practice no entries at all are made in the national income accounts.

Some things purchased by non-residents are never exported — a building, for example. Again, in principle, the product component, "producers' plant and equipment," or some similar item, should show a decrease, and an increase should be recorded in a foreign-money claims item. In practice nothing happens in the national income accounts. The building was entered in the "construction" total when it was built; the purchase of the building by a non-resident does not cause a negative entry in this or any other product category. And in the national income accounts no category of money claims is affected.

Some things purchased by non-residents, on the other hand, are exported in the very act of purchase; there can be no time interval between purchase and export. A British tourist, for example, spends money in the United States; United States shopkeepers and railroad lines are "exporting" their goods and services.

Kuznets, like the Department of Commerce, has no item of "change in money claims." His international-account item is practically the same as that of the Commerce Department computations, though the terminology is quite distinct. He calls it "net changes in claims against foreign countries." This consists of "balance on commodity and service account" plus "net currency movements."<sup>1</sup> Mere transfers of ownership, from residents to non-residents, of domestically located inventories, buildings, or other non-money assets are not reflected in any shifting in the product components of Kuznets' national income estimates.

44. Normally, the non-resident transfers to the United States seller a deposit (or currency) in dollars. The transaction of § 41 rather than that of § 42 is typical. But the non-resident must have acquired the dollar deposit in some way, and the methods of acquisition must be examined with a view to their effects on the national income accounts.

The non-resident who resides in Great Britain, for instance, may start with a pounds sterling deposit in a British bank. He exchanges this for a deposit in a United States bank. Let it be assumed, as is the usual case, that the British bank already has a deposit in a United States bank. This deposit, or whatever part of it is needed for the purpose, is turned over to the British resident, at the order of the British bank. In exchange for this, the British bank cancels the pounds sterling deposit that the Britisher owned. If the Britisher's deposit was £1000 and if the rate of exchange is \$4 = £1, then the following changes occur:

| BRITISH BANK                  |          |                              |          |
|-------------------------------|----------|------------------------------|----------|
| Assets                        |          | Liabilities                  |          |
| Deposit in United States bank | — \$4000 | Deposit of British residents | — £1000  |
| UNITED STATES BANK            |          |                              |          |
| Assets                        |          | Liabilities                  |          |
| No change                     |          | Deposit of British resident  | + \$4000 |
|                               |          | Deposit of British bank      | — \$4000 |

<sup>1</sup> Kuznets, *National Product since 1869*, p. 48.

The British resident has acquired a money claim on the goods and services of the United States, but the British bank has lost an equal claim. There is no change in the United States capital-movement accounts (or in the British accounts either), in domestic-money claims held by non-residents, or in foreign-money claims held by residents. Neither nation has experienced a change in real-asset position.

The non-resident may have acquired his dollars by selling in the United States some representative intangibles (Chapter 2, § 3), like a bond or a share of stock. If the economic activity underlying the representative intangibles takes place in the United States — that is, if the stock or bond is a domestic security — the non-resident is merely exchanging one kind of generalized claim on the goods and services of the United States (bonds, stocks) for another kind (bank deposit). If the non-resident is selling a British security, the transaction is analogous to a direct trading of a dollar bank deposit against a pounds sterling deposit.

The non-resident may have acquired the dollar deposit by selling commodities that were located in the United States. The United States buyer will have invested in these non-money assets. From the viewpoint of the nation's accounts, he will also have disinvested by transferring a money claim over United States goods and services to the non-resident. In practice, as already noted, the national income accounts will register no change of any kind.

**45.** The non-resident may have acquired a dollar deposit because income originating in the United States, in the sense of being paid in dollars, belongs to him. A resident of Great Britain, owning land in the United States, rents it to a United States tenant. The tenant pays the rent by transferring a deposit in a United States bank to the British resident. The issue now arises whether this rent is to be counted in the national income of the United States or of Great Britain.

If the aim of the computation is a study of the origin of income by geographical areas,<sup>1</sup> the rent has to be included in the national income of the United States. More commonly, however, the object of the computations is to ascertain the relative economic welfare or economic power of the two groups of people living in the two nations. Then the rent of land located in the United States but owned by a resident of Great Britain must be credited to the national income of Great Britain.

<sup>1</sup> As in the study by Erik Lindahl, Einar Dahlgren, and Karin Kock, *National Income of Sweden, 1861-1930*, pp. 1-2.

Similarly, interest, dividends, and undistributed corporate profits on British-held securities or stock in companies operating in the United States should be credited to Britain's national income. In practice, however, the United States computations have had to attribute net rent and undistributed profits to the country of origin (Chapter 5, §§ 22, 50, 62).

Some students of national income prefer to use the term "national output" for the area-of-origin concept.<sup>1</sup> The "national output" of the United States is said to include the rent in the example immediately above; the "national income" of the United States does not. The rent appears in British "national income," but not in British "national output." Generally, however, income analysts have preferred to define "national income" and "national output" as alternative terms meaning precisely the same thing and including net changes in claims on foreigners. An alternative suggestion is "domestic income" for the area-of-origin concept.<sup>2</sup> "Domestic income" also includes work done in the area by non-residents (transients) and excludes work done by residents while temporarily abroad. Domestic income thus equals national consumption (consumption expenditure of residents, at home or abroad) plus domestic capital formation (investment located within the area) plus the balance of trade in goods and services. National income, on the other hand, equals national consumption plus net investment made at home or abroad.

Dividends and interest received by United States residents on their foreign investments are added to exports, and similar payments made to non-residents by United States payors are added to imports, in the computation of the Commerce Department's "net export of goods and services."

46. The residents of one country may obtain claims against those of another country through remittances from emigrants, or, conversely, by importation of money by immigrants. Whether these are to be counted in the "national income" of the receiving country depends on whether "income" is defined narrowly, to include items of more or less regular recurrence representing current factor payments, or broadly, to reflect national consumption plus net change in national asset position from all causes. The broader measure is preferable, if

<sup>1</sup> J. R. Hicks, *The Social Framework*, p. 121.

<sup>2</sup> Rollin F. Bennett, "Significance of International Transactions in National Income," *Studies in Income and Wealth*, VI, 142.

the aim is, as it usually is, to reflect changes in the material welfare of a particular group of people (see also Chapter 10, § 1). The same question is raised by revaluations of claims on non-residents, whether occasioned by price or exchange fluctuations; remittances of inheritances, indemnities, and similar transfer payments; and interest on foreign-government debt (Chapter 7, §§ 65-68).

**47.** A summary of the international transactions that have been analyzed in §§ 40-46 leads to the following conclusions with respect to saving, investment, and employment:

By producing for export, a country generates employment and money income at home, without obtaining any goods and services that this money income can be spent on. Saving must, therefore, increase by the amount of the production for export. The saving is accompanied by investment (§§ 41-43), in the form of generalized money claims on foreign countries; that is, on non-residents. Producing for export, in itself, without considering imports that it may induce, tends to reduce unemployment and to create inflation.

By purchasing for import, a country increases its investment in domestic non-money assets, or its government purchases, or its purchases for consumption (or temporarily shows a loss if the purchase is expensed), without itself producing anything or drawing down its domestic stocks of goods, machinery, or other non-money assets. The import is accompanied by an equal amount of dissaving unless the spending is for investment. The dissaving is accompanied by disinvestment in the form of a decrease in money claims on non-residents. Purchasing for import, in itself, tends to create unemployment at home and to prevent inflation.

In a purely formal or bookkeeping sense, the existence of a small net export balance indicates a small amount of home employment due to foreign trade. Part of the home employment created by the demand for gross exports is counterbalanced by the home unemployment created by the purchases of foreign goods. But in the more important sense of causation, the net figure shows very little. If country A exports \$10 billion, and, as a result, foreign countries export \$9 billion to country A, and if the factors of production making the \$10 billion exports are highly specialized and if the home market is already so saturated with their products that it would refuse to take much more even at lowered prices, then the \$10 billion export is a better measure of the true stimulus to employment given by the international trade than is the \$1 billion net export balance.

48. Governments had been keeping comprehensive and detailed records of imports and exports of merchandise for many years before national income computations were attempted. No sampling, extrapolation, or special surveys are needed. Data on imports or exports of services, however, are often difficult to compile.

Table 27 presents the data on "net exports of goods and services" (Commerce), or "net change in claims against foreign countries" (Kuznets).

In the United States, imports and exports of goods and services were just about equal in each of the years 1929–41 inclusive; even the boom year of 1929 showed a net export of goods and services of only \$0.6 billion. There was a small net export balance in every year except 1936 (\$0.1 billion import balance), the maximum being \$1.5 billion in 1940.

For merchandise only, the gross data are not much larger, in relation to the total economy. In 1940, for example, imports of merchandise only were \$2.6 billion and exports, \$4 billion.

For the years of World War II, the Commerce Department data continue to show an insignificant export or import balance, but this result is a reflection of the bookkeeping of war. The huge physical exports of government-owned goods for the United States' war effort and for lend-lease appear only in the figure for "federal government expenditures for goods and services," not in exports as such.<sup>1</sup> And foreign expenditures by the United States government for goods and services utilized abroad are not counted as imports.<sup>2</sup>

For the nineteen-twenties, Kuznets' data indicate that the annual "change in claims against foreign countries" was usually less than one per cent of the total national income.

49. When gold or silver is imported — from Great Britain to the United States, for example — and goes into the monetary stock, a British resident or bank gains thereby a bank deposit in the United States, and the residents of the United States gain the precious metal. In the national income accounts of the United States, under the product approach, two entries may be made, in principle: "increase in monetary stock" (a kind of inventory account); and either "imports

<sup>1</sup> *Survey of Current Business*, February, 1945, p. 5, Tables 2 and 10. See also *ibid.*, February, 1946, pp. 23–26.

<sup>2</sup> Nor are they included in "government expenditures for goods and services," partly because they are offsets to lend-lease. For more details, see Milton Gilbert, "U.S. National Income Statistics," *Economic Journal*, April, 1943, p. 79.

TABLE 27  
Net Exports of Goods and Services, United States, 1919-46  
(Kuznets and Commerce)

(in billions of current dollars)

| Year | Absolute Amount      |                       | Per Cent of     |                      |
|------|----------------------|-----------------------|-----------------|----------------------|
|      | Kuznets <sup>a</sup> | Commerce <sup>b</sup> | National Income | Net National Product |
| 1919 | \$3.2                |                       | 5               |                      |
| 1920 | 2.3                  |                       | 3               |                      |
| 1921 | 1.3                  |                       | 2               |                      |
| 1922 | 0.45                 |                       | 1               |                      |
| 1923 | 0.22                 |                       | c               |                      |
| 1924 | 0.7                  |                       | 1               |                      |
| 1925 | 0.33                 |                       | c               |                      |
| 1926 | 0.12                 |                       | c               |                      |
| 1927 | 0.45                 |                       | 1               |                      |
| 1928 | 0.7                  |                       | 1               |                      |
| 1929 | 0.43                 | \$0.6                 | c               | 1                    |
| 1930 | 0.6                  | 0.7                   | 1               | 1                    |
| 1931 | 0.15                 | 0.2                   | c               | c                    |
| 1932 | 0.05                 | 0.2                   | c               | c                    |
| 1933 | 0.12                 | 0.2                   | c               | c                    |
| 1934 | 0.35                 | 0.5                   | 1               | 1                    |
| 1935 | -0.15                | 0.2                   | c               | c                    |
| 1936 | -0.30                | -0.1                  | c               | c                    |
| 1937 | -0.10                | 0.1                   | c               | c                    |
| 1938 | 0.8                  | 1.1                   | 1               | 1.5                  |
| 1939 |                      | 0.8                   |                 | 1                    |
| 1940 |                      | 1.5                   |                 | 1.7                  |
| 1941 |                      | 1.2                   |                 | 1.0                  |
| 1942 |                      | d                     |                 | c                    |
| 1943 |                      | -1.5                  |                 | -0.8                 |
| 1944 |                      | -1.8                  |                 | -1.0                 |
| 1945 |                      | 0.4                   |                 | c                    |
| 1946 |                      | 4.9 <sup>e</sup>      |                 |                      |

<sup>a</sup> *National Product since 1869*, p. 46, Table I-11. "Net changes in claims against foreign countries," consisting of "balance on commodity and service account" plus "net currency movements."

<sup>b</sup> *Survey of Current Business*, May, 1942, p. 12, Table 2 (1929-38); April, 1944, p. 13, Table 10 (1939-40); February, 1946, p. 8, Table 6 (1941-45). The data for 1929-45 do not include net export of gold and silver (see Table 28 below); they also exclude transfer abroad of goods for the account of the United States armed forces, and lend-lease and reverse lend-lease. Data on imports and on exports of merchandise only are given for 1939-44 in *Survey of Current Business*, February, 1945, p. 19, Table 10. See also *ibid.*, February, 1946, pp. 23-26.

<sup>c</sup> Less than one half of 1 per cent.

<sup>d</sup> Less than \$50 million.

<sup>e</sup> *Survey of Current Business*, February, 1947, p. 7, Table 1. Includes net exports and monetary use of gold and silver.

**TABLE 28**  
**Net Exports and Monetary Use of Gold and Silver,**  
**United States, 1929-45 (Commerce)**

(in billions of current dollars)

| Year | Net Export of Gold<br>and Silver <sup>a</sup> | Net Change in<br>Monetary Stock <sup>a</sup> | Net Exports and<br>Monetary Use of Gold<br>and Silver <sup>b</sup> |
|------|---|--|--|
| 1929 | \$-0.1  | \$-0.1                                       | ..   |
| 1930 | -0.2  | 0.3  | ..   |
| 1931 | 0.2   | 0.0  | ..   |
| 1932 | 0.0   | 0.1  | ..   |
| 1933 | 0.2   | 0.2  | ..   |
| 1934 | -1.3  | 1.5  | ..   |
| 1935 | -2.1  | 2.3  | ..   |
| 1936 | -1.2  | 1.0  | ..   |
| 1937 | -1.5  | 1.9  | ..   |
| 1938 | -1.9  | 2.0  | ..   |
| 1939 | -3.2  | 3.5  | \$0.2  |
| 1940 | -4.1  | 4.5  | 0.3  |
| 1941 | -0.6  | 1.1  | 0.2  |
| 1942 |   |  | 0.1  |
| 1943 |   |  | c  |
| 1944 |   |  | -0.1   |
| 1945 |   |  | -0.1   |

<sup>a</sup> *Survey of Current Business*, May, 1942, p. 12, Table 2 (1929-41).

<sup>b</sup> *Ibid.*, April, 1944, p. 13, Table 10 (1939-40) and February, 1946, p. 8, Table 6 (1941-45).

<sup>c</sup> Less than \$50 million.

of gold or silver" or, alternatively, a negative entry under "net increase in money claims against non-residents." There is no net change in the total national product.

If domestically mined gold or silver is sold to the domestic government, the national product registers an increase, through the monetary-stock item.

These two kinds of transactions may be consolidated in the records, and the net result labeled "net exports and monetary use of gold and silver," and presented as one of the product components, in addition to the product component, "net export of goods and services." This is the procedure now followed by the Department of Commerce, which formerly <sup>1</sup> stated the two items separately (Table 28). Acquisi-

<sup>1</sup> *Survey of Current Business*, May, 1942, p. 12, Table 2.



tion of gold by the monetary authorities is considered as foreign investment.

50. Kuznets computes the change in the stocks of gold, of silver bullion held in mints and assay offices, and of silver coin. He then subtracts the net change in the gold stock that results from international flow. The balance he lists as a sub-item, "monetary metals," in the product component, "net change in inventories."

The net change in gold stocks resulting from international flow is taken into account in computing the product component, "net changes in claims against foreign countries." There it serves as a completely offsetting item to the change in money claims that arises from the international movement of gold.<sup>1</sup>

### VIII. NET CAPITAL FORMATION

51. The net addition, during the year, to business inventories, plus the net increase in other business assets including all residences (not counting money or money claims), plus the net increase in private claims against non-residents, gives a total that is usually referred to as "private net capital formation." And if the government's net investment for the year is added, usually comprising only government construction (§ 29), the total is commonly labeled "net capital formation." In those series that do not count depreciation on owner-occupied houses or government assets included in investment in the year of construction, the total is not as "net" as it should be. But in principle the total shows how much of the nation's current output went into creating means of further production for later years rather than into goods and services that were used up during the year. It is the amount of saving out of the year's income (see Chapter 8).

Table 29, utilizing Kuznets' latest data, shows the amount of net capital formation in the United States for 1919-38. For each of the years 1919-33, it is practically the same as in Kuznets' earlier published estimates, but for each of the succeeding years (except 1935) it is much lower.<sup>2</sup>

The Department of Commerce data, as already noted (§§ 34, 38), are not adequate for a table of net capital formation, chiefly because they contain no depreciation item for owner-occupied houses and do not include in capital formation any part of government expenditure. But for purposes of rough comparison, it seems advisable to use the

<sup>1</sup> Kuznets, *National Product since 1869*, p. 47.

<sup>2</sup> Cf. Kuznets' *National Income and Its Composition*, I, 269, Table 37, and his *National Product since 1869*, p. 54.

TABLE 29  
Net Capital Formation and Its Components, United States,  
1919-38 (Kuznets)

(in billions of current dollars) <sup>a</sup>

| Year | Net Public<br>Construc-<br>tion | Net Private<br>Residential<br>Con-<br>struction | Net Pri-<br>vate Non-<br>Residential<br>Construc-<br>tion and<br>Producers'<br>Durable<br>Equipment | Net<br>Change in<br>Inventories | Net<br>Change in<br>Claims<br>Against<br>Non-Resi-<br>dents | Net Capital<br>Formation <sup>b</sup> |                                   |
|------|---------------------------------|---|---|---------------------------------|---|---------------------------------------|-----------------------------------|
|      |                                 |   |   |                                 |   | Absolute<br>Amount <sup>b</sup>       | Per Cent<br>of National<br>Income |
| 1919 | \$1.2                           | \$-0.2  | \$2.1   | \$4.0                           | \$3.2   | \$10.2                                | 15.9                              |
| 1920 | 0.3                             | -0.9  | 2.1   | 7.3                             | 2.3   | 11.2                                  | 15.1                              |
| 1921 | 0.8                             | 0   | 0.9   | 0.15                            | 1.3   | 3.1                                   | 5.2                               |
| 1922 | 1.0                             | 1.2   | 1.3   | 0.6                             | 0.45  | 4.5                                   | 7.4                               |
| 1923 | 0.7                             | 1.8   | 3.0   | 3.1                             | 0.22  | 8.7                                   | 12.1                              |
| 1924 | 1.0                             | 2.4   | 2.7   | -0.9                            | 0.7   | 5.9                                   | 8.2                               |
| 1925 | 1.2                             | 2.7   | 3.5   | 1.8                             | 0.33  | 9.5                                   | 12.5                              |
| 1926 | 1.2                             | 2.6   | 4.0   | 1.6                             | 0.12  | 9.4                                   | 11.5                              |
| 1927 | 1.5                             | 2.2   | 3.6   | 0.45                            | 0.45  | 8.2                                   | 12.0                              |
| 1928 | 1.8                             | 1.7   | 3.8   | -0.34                           | 0.7   | 7.7                                   | 9.4                               |
| 1929 | 1.7                             | 1.2   | 4.7   | 2.4                             | 0.43  | 10.5                                  | 12.0                              |
| 1930 | 2.1                             | -0.5  | 2.7   | -1.1                            | 0.6   | 3.8                                   | 5.0                               |
| 1931 | 1.9                             | -0.5  | -0.1  | -1.3                            | 0.15  | d                                     | e                                 |
| 1932 | 1.1                             | -1.1  | -2.1  | -2.4                            | 0.05  | -4.4                                  | -10.3                             |
| 1933 | 0.5                             | -1.3  | -1.9  | -1.1                            | 0.12  | -3.7                                  | -8.8                              |
| 1934 | 0.7                             | -1.2  | -1.3  | -1.7                            | 0.35  | -3.2                                  | -6.5                              |
| 1935 | 0.6                             | -0.9  | -0.4  | 1.3                             | -0.15   | 0.4                                   | 0.7                               |
| 1936 | 1.3                             | c   | c   | 2.5                             | -0.30   | 3.7                                   | 5.9                               |
| 1937 | 0.9                             | c   | c   | 2.5                             | -0.10   | 4.6                                   | 6.5                               |
| 1938 | 0.9                             | c   | c   | -0.27                           | 0.8   | 0.6                                   | 0.9                               |

<sup>a</sup> All data except the next to the last column are from preceding tables.

<sup>b</sup> *National Product since 1869*, p. 54, Table I-17. Discrepancies between this and the sum of the preceding columns reflect the evening-off of amounts.

<sup>c</sup> Not available.

<sup>d</sup> Less than \$50 million.

<sup>e</sup> Less than one half of 1 per cent.

imperfectly net figure derivable from the Commerce Department data, rather than go without any idea at all of the relative size of the components of net capital formation, despite the warning of the Department officials to the contrary. Kuznets supplies truly net estimates of capital formation and its components, since he utilizes Fabricant's estimates of depreciation on owner-occupied housing and on the government assets that he includes in investment. Table 30 presents the estimates of (roughly) net capital formation derived from the Commerce Department data.

**52.** If the totals in Tables 29 and 30 are compared with the totals of national income (Kuznets) in Table 6 or of net national product (Commerce) in Table 18, it will be seen that by far the greater part of the national income is in the form of goods and services going to consumers or government instead of net capital formation. Indeed, for three years in the depressed nineteen-thirties Kuznets' estimates show a net decline in capital formation; the nation as a whole was using up some of its capital for current consumption and government services, because of the great falling-off in production. The Commerce Department data, too, indicate negative net capital formation for at least two of those years.

The most unstable element in net capital formation appears to be the net change in inventories. In absolute change from year to year it reaches amounts not approached by the other items — for instance, \$7.3 billion during 1920, and — \$2.4 billion in 1932 (Kuznets) — even after placing each year's increase on a current-price basis (Chapter 5, §§ 39–44).

**53.** For analysis of fluctuations in business activity, gross rather than net capital formation is sometimes needed. It is the gross construction, for example, rather than the net construction that indicates the current volume of employment in the building trades. A business concern's decision to buy a new machine causes the same amount of activity whether the machine is a replacement or a net addition to the firm's assets. Tables of gross capital formation can be constructed from the preceding tables, in the same manner as Tables 29 and 30, using gross instead of net for public construction, private residential construction, and private non-residential construction and producers' durable equipment.<sup>1</sup> For change in inventories and change in claims

<sup>1</sup> For economy of space, tables of gross capital formation are not reproduced here (but see Tables 22, 24, and 25). For Kuznets' totals of gross capital formation, see *National Product since 1869*, p. 50, Table I-13, and his comments on pp. 15–17.

TABLE 30

## Approximate Net Capital Formation, United States, 1929-46 (Commerce)

(in billions of current dollars)

| Year | Approximate Private Net Construction and Producers Durable Equipment (Table 26) | Net Change in Inventories (after adjustment to remove price fluctuations) (Table 23) | Net Export of Goods and Services (Table 27) and Net Exports and Monetary Use of Gold and Silver (Table 28) | Approximate Private Net Capital Formation (sum of three preceding columns) <sup>b</sup> | Gross Public Construction (Table 22) | Approximate Net Capital Formation (Col. 4 + Col. 5) |   |
|------|---|--|--|---|--------------------------------------|---|---|
|      |   |  |  |   |                                      | Absolute Amount <sup>b</sup>                        | Per Cent of Net National Product (Table 18) |
| 1929 | 8   | 2  | a  | 10  | 2                                    | 13  | 14  |
| 1930 | 4.5   | a  | 1  | 5   | 3                                    | 8   | 10  |
| 1931 | 1   | -2   | a  | a   | 3                                    | 2   | 3   |
| 1932 | -2  | -2   | a  | -4  | 2                                    | -2  | -4  |
| 1933 | -3  | -1   | 1  | -3  | 1                                    | -2  | -4  |
| 1934 | -1  | a  | 1  | -1  | 1.5                                  | 1   | 2   |
| 1935 | 0   | a  | a  | 1   | 1                                    | 2   | 3   |
| 1936 | 2   | 2  | a  | 4   | 2                                    | 6   | 8   |
| 1937 | 4   | 1  | 0.5  | 5   | 2                                    | 7   | 9   |
| 1938 | 1.5   | -1   | 1  | 1   | 2                                    | 3.5   | 5   |
| 1939 | 3   | 1  | 1  | 5   | 2                                    | 7.5   | 9   |
| 1940 | 5   | 2  | 2  | 9   | 3                                    | 11  | 12  |
| 1941 | 7   | 3.5  | 1  | 12  | 5                                    | 18  | 16  |
| 1942 | a   | -0.5   | a  | a   | 11                                   | 11  | 8   |
| 1943 | -3  | -1   | -1.5   | -5  | 6                                    | 1   | e   |
| 1944 | -3  | -2   | -2   | -6  | c                                    | -6 <sup>d</sup>                                     | 3   |
| 1945 | 1   | -0.6   | a  | 1   | c                                    | 1 <sup>d</sup>                                      | e   |
| 1946 | 13.5  | 6.5  | 5  | 25  | c                                    | 25 <sup>d</sup>                                     | 13  |

<sup>a</sup> Less than \$500 million in absolute amount.<sup>b</sup> Apparent discrepancies are due to rounding of figures.<sup>c</sup> Not available.<sup>d</sup> Less than one half of 1 per cent.

against non-residents, the same net figures as those in Tables 29 and 30 are used in the prevailing concept of gross capital formation; the data for these elements in capital formation are, therefore, not quite so useful for studying fluctuations in activity as are the data for the others (§§ 62, 65).

#### IX. GROSS NATIONAL PRODUCT <sup>1</sup>

54. If to the Commerce Department estimate of net national product (§ 20) there are added back (a) the depreciation and depletion subtracted in reaching that figure, and (b) two minor items, the result is an estimate of the Department concept of "gross national product." The two minor items added to net national product are: capital outlays charged to current expense (§ 69) and "allocations by insurance companies or self-insurers to reserves against claim payments for fire or other damage to business property." <sup>2</sup> The chief distinctions are between (1) national income, reached by Commerce and Kuznets by subtracting both depreciation and business taxes; (2) net national product, reached by the Department by subtracting depreciation but not business taxes; and (3) gross national product, reached by Commerce and Kuznets by not subtracting either depreciation or business taxes.

The non-deduction of depreciation and depletion alters the following items. Under the factor-payment approach, profits are increased, being now gross profits before depreciation or depletion. Under the product approach, the increase occurs in construction and producers' durable equipment, both now being on a gross basis. The other product components are unchanged: consumer purchases, government purchases (Commerce series), net increase in inventories, and net exports. In the new Commerce series, depletion will not be deducted in computing net national product, hence it will not have to be added back in computing gross national product.

55. The concept of gross national product, although developed earlier by Kuznets, was widely used for the first time during World War II in the annual statements on national income by the Com-

<sup>1</sup> Cf. J. M. Keynes, "The Concept of National Income: A Supplementary Note," *Economic Journal*, March, 1940, pp. 60-65; Simon Kuznets, *National Income — A Summary of Findings*, pp. 117-21, "Why Gross National Product?" and Jerome Rothenberg, discussion, *Studies in Income and Wealth*, X, pp. I-77 — I-78 (mimeograph).

<sup>2</sup> Edward F. Denison, "Report on Tripartite Discussions of National Income Measurement," *Studies in Income and Wealth*, X, pp. I-5, I-7, I-12 (mimeograph).

merce Department. War expenditures for goods and services produced during the year (or coming out of inventories, or imported) could not conveniently be expressed as a percentage of national income under the Commerce concept. The amounts paid by the government to contractors and others went to cover not only factor payments, but also indirect taxes payable by those contractors and others. The national income total includes only factor payments. Hence, expenditure for war goods would be more than 100 per cent of that part of national income created in producing those goods; and the public would wonder how the war goods could have been produced. By adding indirect taxes to national income a net national product total (Commerce terminology) could be obtained, and an expenditure for war goods that were made during the period in question could be expressed as a percentage of the net national product without running over 100 per cent.

But even this adjustment would not remove all possibility for puzzlement in the minds of the consumers of the statistics. Suppose an expenditure for war goods was reflected, not in productive activity during the same period, but in the wearing-down of a building or equipment; munitions can be produced — at least in part — by wearing out assets that have been produced in a previous time period. Thus, a war expenditure might be accompanied by a net national product (to say nothing of a national income) of zero, or at least less than the war expenditure, and the public would be at a loss to know "out of" what, in real terms, the war expenditure came.

The solution adopted was to count, in the total product of which war goods formed a percentage, any product obtained by depreciating any structures or equipment. Thus, war goods costing \$100 made possible, in real terms, by a wearing-out of an asset to the extent of \$40 and wage earners' efforts of \$60 could be said to come out of a (gross) product of \$100 — a statement which might seem less confusing than the assertion that \$100 worth of war goods came out of a net product of \$60. The gross product was computed as \$100 of government expenditures, or, under the factor-payment approach, \$40 of profits before depreciation and \$60 of wages.<sup>1</sup>

<sup>1</sup> The statements in this paragraph are inferences from, rather than a paraphrase of, the Commerce Department explanation of its procedure. Cf. Milton Gilbert, "Measuring National Income as Affected by the War," *Journal of the American Statistical Association*, June, 1942, pp. 186-98, and "War Expenditures and National Production," *Survey of Current Business*, March, 1942, pp. 9-16; and Milton Gilbert and R. B. Bangs, "Preliminary Estimates of Gross National Product, 1929-41," *ibid.*, May, 1942, pp. 9-13.

This solution was not a complete one, however. Gross national product includes only a net figure for inventory change. If war goods worth \$100 were produced by drawing down inventory by \$40 and wage earners' work of \$60, the \$100 worth of war goods would have to be said to come "out of" \$60 gross national product (\$100 government expenditures minus \$40 net decline in inventory). A similar qualification applies with respect to changes in claims on non-residents. However, it may be argued that the gross national-product total provided a little less perplexity for the unsophisticated user of national income statistics than the net national-product or national-income totals, provided he was just sophisticated enough to realize that it did not tell the whole story.

But the widespread use of the gross national-product total has been defended by some reasons that lack validity (§§ 63-67).

**56.** One reason given for ignoring depreciation and depletion is the difficulty of estimating the amount.<sup>1</sup> This difficulty has two aspects: inadequate coverage, and the questionable value for economic analysis of the depreciation and depletion estimates that are available (Chapter 5, §§ 30, 31).

The data compiled by the Department of Commerce on depreciation do not match in coverage the data on gross investment (§§ 34, 39). The amounts as estimated under prevailing accounting methods, even after correction by the national income estimators for changes in the price level, are only the roughest sort of approximation to the economic realities. The physical decrease in a machine during a year of use is not the same kind of observable, countable decrease that occurs in an inventory of bushels of wheat, for example, as the wheat is used up in the production of flour. Consequently, so the argument runs, the estimate of economic decrease, the loss measured in money terms, is less dependable for machines and other durable goods than for inventoried goods.

Straight-line depreciation (Chapter 5, § 30) is by far the most common type of depreciation accounting in the United States. The cost of the asset when new, less estimated salvage value, is divided by the estimated number of years of life, and the quotient is used each year as the depreciation charge. No doubt this charge almost

<sup>1</sup> Milton Gilbert and George Jaszi, "National Product and Income Statistics as an Aid in Economic Problems," *Readings in the Theory of Income Distribution*, William Fellner and Bernard F. Halsey, eds., p. 47 (reprinted from *Dun's Review*, February, 1944).

always overstates or understates actual decline in market value for any given year, or decline in value in some other sense. But complete disregard of depreciation, as in gross national-product computation, does not necessarily give a more nearly accurate estimate of true net output for any one year, and it certainly overstates net output over a period of years.

An estimate of gross national product is no doubt "less influenced by the diverse judgments of the several estimators"<sup>1</sup> than is net national product, since the determination of depreciation and depletion is largely a matter of individual judgment. In general, any gross concept will be estimated with less divergence by various estimators, since each deduction to arrive at a less gross figure offers an additional opportunity for differences of opinion to arise. However, the question remains, whether an estimate of gross national product, no matter how close to accuracy, helps to answer any important questions.

**57.** A more substantial argument for ignoring depreciation and depletion charges arises from the fact that a structure or machine may deteriorate very little in its physical operating aspects, even though its value has declined because it has come one year closer to the end of its life. In contrast, if a stock of raw materials or other inventoried goods is found to have declined in value during the year, and if price levels have not changed, it is almost certain that the inventory is smaller physically. It cannot do the same job next year in keeping production moving that its predecessor did this year.

On the other hand, if a machine does reach the end of its useful life during the year, an entire new machine, not just a part of a machine, must be obtained if production is to go on at an unchanged rate. At the start of a year, a machine that cost \$10,000 nine years ago has depreciated over the years to a value of \$1000. Twelve months later, just as the year ends, it reaches the end of its life. Ten thousand dollars must be spent at once to replace it if production is to continue the next year at the same level. In contrast, if an inventory of wheat, worth \$1000 on January 1, is all used up by the end of the year, only \$1000 need be spent at once to replace it to allow production to start the new year as it started the old year.

**58.** From these physical facts there can be deduced two economic consequences of particular interest to students of national income and business fluctuations.

<sup>1</sup> M. A. Copeland, "Concepts of National Income," *Studies in Income and Wealth*, I, 21.



One consequence is that if a burst of production is required over a short period of time, as in war, an estimate that disregards depreciation and depletion comes nearer to showing what can be turned out. In contrast, the inventory item should still remain on or close to a net basis, since it is unlikely that inventories can be decreased appreciably without impairing the economy's ability to turn out war goods or consumer goods. The inventory "pipe lines" from producer to consumer must always contain a substantial amount.

The reproduction cost, new, of the buildings and machinery that reach the end of their useful life during the year might indeed be greater than the amount charged off for depreciation. In that case, disregard of the depreciation charge-off would not give a closer estimate of total consumer goods and war goods that could be turned out during the year. However, the "useful-life" concept is stretched during a period of emergency. In such a period it is unlikely that the reproduction cost, new, of buildings and machinery discarded would exceed the depreciation charged.

Although the gross national product is, therefore, usually closer to the maximum possible short-term output than is national income (or the "net national product" of the Commerce Department), it still falls short of that maximum by a considerable distance, for three reasons.

First, the amount of goods and services produced in the short period can be increased by postponing maintenance and repair work, thus releasing manpower and materials for direct production. The difference between gross national product, as ordinarily defined,<sup>1</sup> and national income does not include any amount reflecting maintenance and repair work. Hence, the gross national product figure gives no clue to the amount of maintenance and repair that was carried on during the year, to say nothing of the amount that could have been postponed.

Second, deliveries to consumers and government can be increased by some drawing-down of inventories.

Third, the supply of the final products desired can be increased by working the machines and other fixed capital harder, wearing them out faster, than the normal figure for depreciation would indicate. But gross national product, as usually computed, is national income

<sup>1</sup> See, however, one of the variant definitions suggested in Kuznets, *Commodity Flow and Capital Formation*, pp. 7-8.

with merely the normal depreciation charges added back. This is true at least for capital assets that were purchased with normal times in view. Whatever the limit, it is not revealed by the customary depreciation charge.

**59.** The second economic consequence alluded to in § 58 is the fact that, even apart from the possibility of drawing on inventories, only a loose relation exists between the rate of consumer purchases and the concurrent rate of construction of the buildings and machines that make such purchases possible. Or, if the relation is not loose or erratic, at least it is not a dollar-for-dollar relation over short periods. Consequently, there may be a change in rate of consumer purchases without a corresponding change in the volume of employment in the building and machinery trades. And the volume of employment there may fluctuate without any apparent connection with the current volume of consumer purchases, or change in such purchases, or change in rate of change (acceleration principle). For students of the business cycle it is therefore of special importance to have data on gross capital formation. But it is not evident that these facts are also reasons for computing gross national product. The latter is a composite of gross capital formation and volume of consumer purchases and government purchases.

**60.** These considerations have provoked a discussion of two further questions concerning the use of the gross national-product total.

First, is gross national product a better measure of employment than national income (or net national product)? Second, is it a better measure of money flows within the economy? In answering these questions, an elementary digression in terms of a simple hypothetical case may be helpful for the beginning student of national income. The purpose of the digression is to fix firmly in mind the contrast between a gross change in depreciable assets and a possible concept of gross change in inventoriable assets, and to review the comparison between gross and net in depreciable assets.

**61.** Suppose that the entire economy consists of two business firms, A and B.

Business firm A starts the year with \$10,000 in cash, no inventory, no fixed capital. During the year it hires labor to start construction of a machine that will cost \$10,000 when finished. Only \$1000 has been spent on the machine when the year ends. (Materials cost is zero, to simplify the illustration.) Firm A sells nothing during the year.

Firm B starts the year with a machine that is carried on its books at \$10,000, the cost of production. In the course of the year firm B charges \$1000 depreciation on this machine while using it in rendering services sold to consumers for \$1000. Firm B has no other costs.

The national income accounts are:

|   |        |  |
|---|--------|--|
| I. Firm A: Sales  | \$0    |  |
| Depreciation charge   | 0      |  |
| Other expenses  | 0      | (The \$1000 outlay on wages is capitalized.) |
| Profit  | 0      |  |
| Firm B: Sales   | 1000   |  |
| Depreciation charge   | 1000   |  |
| Other expenses  | 0      |  |
| Profit  | 0      |  |
| II. Wages   | \$1000 |  |
| Profit  | 0      |  |
| National income   | \$1000 |  |
| Expenditure for consumption   | 1000   |  |
| Saving  | \$0    |  |
| III. Investment, by A   | \$1000 |  |
| Disinvestment, by B   | 1000   |  |
| Net investment  | \$0    |  |
| IV. Gross national product  |        |  |
| Computed by ascertaining consumer purchases (\$1000), net increase in business inventories (zero), and gross production of durable business assets (\$1000) | \$2000 |  |
| Computed by adding back depreciation (\$1000) to national income (\$1000)   | 2000   |  |

At the start of the year, firm A has \$10,000 in cash and no machine; at the end, \$9000 cash and \$1000 worth of machine. Firm B has at the respective dates \$10,000 book value of machine and no cash, and \$9000 book value of machine and \$1000 cash.

If firms A and B merge just as the year begins, the accounts for the single firm AB for the year show:

|                     |        |                          |
|---------------------|--------|--------------------------|
| Sales               | \$1000 |                          |
| Depreciation charge | 1000   |                          |
| Other expenses      | 0      | (The \$1000 outlay       |
| Profit              | 0      | on wages is capitalized) |

Firm AB has invested \$1000 and disinvested \$1000, a net investment of zero. The disinvestment element is represented by the depreciation charge of \$1000. The national income (wages) is \$1000. Gross national product is therefore \$2000. All the totals are the same as before the merger.

But if the merged firm AB counterbalances the wear-and-tear of the utilized machine, not by building a part of a new machine, but by repairing the old one as it tends to wear out, there is a change in the gross national product. No depreciation charge is recorded, for the depreciation is prevented by the repairs. The repairing is usually not considered to enhance the value of any of the assets. The outlay for repairs is therefore not capitalized. Actually, of course, the asset is worth more than if the repairs had not been made, and this implication for the balance sheet is realized by setting the depreciation allowance at a lower level than if no such repairs had been contemplated. Consequently, firm AB's accounts now read:

|                         |         |                          |
|-------------------------|---------|--------------------------|
| Sales                   | \$1,000 |                          |
| Depreciation charge     | 0       |                          |
| Maintenance and repairs | 1,000   | (This outlay on wages is |
| Profit                  | 0       | now not capitalized)     |

Firm AB has invested nothing and disinvested nothing. No durable business assets have been produced, and the depreciation charge is zero. National income is \$1000 (wages), and gross national product also is \$1000.

When a new machine is being constructed while an old one is wearing out, the new-machine element in the situation is of course physically distinguishable, physically separate in space, from what is left of the old machine. But when the wearing-out is being counterbalanced by adding new parts to the old machine — perhaps lubri-

cating it more carefully, and so on — the new-machine element in the situation is physically almost indistinguishable from the old-machine element. This distinction in physical appearance consequently plays a decisive rôle in determining the size of gross national product. But it has no effect on the amount of national income.

As long as firms A and B, in the same line of business, are not merged, it is impossible to use the maintenance-repairs technique to counteract the wear-and-tear; firm A is not going to spend money maintaining B's machine. The wear-and-tear on B's machine can be counterbalanced by A only through investment. The issue arises, of course, only because one firm is contracting (B) while the other is expanding (A). Firm AB would be neither contracting nor expanding. In general, if an industry is characterized by a number of competing firms, not all expanding at a like rate (or not all contracting at a like rate), the gross national product may be somewhat larger than if the industry contained fewer and bigger firms showing a smaller average deviation from the mean value of the industry's expansion or contraction. More briefly, and loosely, horizontal merger tends to reduce gross national product if national income remains unchanged.

**62.** A firm can wear out its assets in production by drawing down its inventory instead of wearing out its equipment. However, if the example of the two firms in § 61 is cast in terms of inventory, the gross national product is smaller.

Firm A starts the year with \$10,000 cash, pays out \$1000 in wages on the production of goods that go into inventory, and sells nothing. Firm B starts with \$10,000 in inventory, sells off \$1000 of it to consumers at no profit, and has no outlays of any kind:

|            |                     |        |
|------------|---------------------|--------|
| I. Firm A: | Sales               | \$0    |
|            | Change in inventory | + 1000 |
|            | Wages               | 1000   |
|            | Other expenses      | 0      |
|            | Profit              | 0      |
| Firm B:    | Sales               | 1000   |
|            | Change in inventory | — 1000 |
|            | Other expenses      | 0      |
|            | Profit              | 0      |

|  |             |
|--|-------------|
| II. Wages  | \$1000      |
| Profits  | <u>0</u>    |
| National income  | \$1000      |
| Expenditure for consumption  | <u>1000</u> |
| Saving   | \$0         |
| III. Investment, by A  | \$1000      |
| Disinvestment, by B  | <u>1000</u> |
| Net investment   | \$0         |
| IV. Gross national product   |             |
| Computed by ascertaining consumer purchases (\$1000) net increase in business inventories (zero), and gross production of durable business assets (zero) | \$1000      |
| Computed by adding back depreciation to national income ("depreciation" is zero)   | 1000        |

If the firms are merged into a single firm, AB, the national income data remain unchanged. Here, as with the maintenance-and-repair case in § 61, the renovating element in the situation merges physically with the old element, or at least is likely to do so. As the flour mill's inventory of wheat is drawn upon, other wheat is poured into the bins to replace it and becomes merged indistinguishably with the old wheat. Not all inventory is like this, however. A firm that is in the process of changing its line of product — a common enough operation in many industries — will be cleaning out an inventory of articles that are clearly distinguishable from the articles coming into inventory. There is a close analogy here to the firm that is allowing one machine to wear out while buying or building another. The gross-national-product definition, however, does not recognize this analogy.

Whatever the nature of the inventory experience of the firm AB during the year, it can be duplicated by the two separate firms A and B. In this respect the inventory problem differs from that of the fixed asset, where an increase in the number of firms makes it more difficult to counterbalance the wear-and-tear by maintenance rather than by new-machine construction.

If assets that are inventoried were treated in gross-national-product computations just as are assets that are depreciated, a vast amount

of new computations would be required for most of which the data are not available. The examples in § 61 oversimplify the recording of inventory. In a more typical case, a manufacturing firm, for example, spends \$600 in January creating inventory that it sells out in February, \$600 more in February creating inventory that it sells out in March, and so on. The computation of the gross production of inventoriable goods by this firm during the year would involve ascertaining and adding each of these \$600 items. Generally speaking, all inventoried purchases or own products of every firm during the year would have to be compiled, with no deduction for sales from inventory to consumers or the government. Sales from inventory to other business firms would, however, be deducted to reach the gross total. In this sense the gross inventory total would not be completely gross. This method of computation would simply follow the precedent set in computing gross national product with respect to depreciable assets. Sales of such assets (machinery, and so on) from one business firm to another are not counted as a net addition to gross national product if the amount spent in constructing these assets was included in gross national product at the time of production.

The computation of such a gross inventory figure is not practicable at the present time (waiving the question of its usefulness) because of the difficulty or impossibility of obtaining most of the data.

**63.** To return to the first of the two questions posed in § 60: Is gross national product a better measure of employment than national income (or net national product)? In other words, does the volume of employment depend upon gross national product rather than national income? Or can the volume of employment fluctuate while gross national product remains unchanged (assuming stable prices)?

A hypothetical illustration will demonstrate that employment can fluctuate while gross national product remains unchanged. At the start of the year, durable capital assets amount to \$10 (cost, new, as produced just before the start of the year). Durable capital assets of \$20 are created during the year. Purchases by consumers are \$10. Inventory on hand at the start of the year is \$10; at the end of the year, also \$10. The gross national product is:

|   |             |
|---|-------------|
| Purchases by consumers                          | \$10        |
| Net change in inventory                         | 0           |
| Durable capital assets produced during the year | <u>20</u>   |
| Gross national product                          | <u>\$30</u> |

If the net change in inventory represents no gross change either, so that the inventory is not touched during the year, employment must have been given to the extent of \$20 in wages (assuming no other factors at work, and no materials cost). The purchases by consumers are then met by wearing down the durable capital assets by \$10. Consequently, of the \$20 of durable capital assets created during the year, \$10 must be for replacement. The amount of durable capital assets on hand at the end of the year is only \$20. The gross national product can be computed from the factor-payment side as follows:

|                                 |           |
|---------------------------------|-----------|
| Wage income                     | \$20      |
| Profits:                        |           |
| Gross receipts                  | 10        |
| Depreciation                    | <u>10</u> |
| Net profits                     | 0         |
| [capitalized wage outlays = 20] |           |
| National income                 | <u>20</u> |
| Add back depreciation           | <u>10</u> |
| Gross national product          | \$30      |

But employment is given to the extent of \$30, not \$20, if the net change of zero in inventory represents a gross change of \$10; that is, if the inventory on hand at the start of the year is sold to consumers for \$10, and workers are employed to build up the inventory to \$10 once more. In this case (total purchases by consumers remaining at \$10), there is no wearing-down of the durable capital assets, and the amount of such assets on hand at the end of the year is \$30 instead of \$20. But the gross national product is still \$30, and can be computed from the factor-payment side as follows:

|                                 |           |
|---------------------------------|-----------|
| Wage income                     | \$30      |
| Profits:                        |           |
| Gross receipts                  | 10        |
| Wages to rebuild inventory      | <u>10</u> |
| Net profit                      | 0         |
| [capitalized wage outlays = 20] |           |
| National income                 | <u>30</u> |
| Add back depreciation           | <u>0</u>  |
| Gross national product          | \$30      |



The point may be made in a simpler, if less realistic, example by assuming that a capital asset, say a machine, worth \$100 is created for concern X. (a) merely by wearing down a machine belonging to firm Y to the extent of \$100, no factor activity at all being involved; or alternatively (b) merely by utilizing labor of \$100, materials cost being zero and no depreciation occurring. In both cases gross national product is \$100, but employment is zero in the first case and \$100 worth in the second.

In brief, the amount of employment (more generally, the amount of factor activity or factor time spent) represented by a given total of gross national product depends on the amount of depreciation in the year's accounts. The recent forecasts of employment in the United States, for example, being in terms of gross national product, are comparable only if they all assume the same total of depreciation and depletion, which they evidently do.<sup>1</sup> National income is, therefore, a better index of activity than is gross national product.<sup>2</sup> Neither one, however, is designed for that purpose. They are adjusted by an index of product prices for any comparison of totals among years or in different countries. What is needed instead, if activity is measured, is adjustment by an index of factor prices (more precisely, if cost in terms of time spent is measured). And then, it has been argued above (Chapter 1, § 11), the totals would be called not "national income" but "national cost" or "national input."

The amount of employment associated with a given total of national income also depends on the amount of depreciation in the year's accounts. But the dependence is quite different from that which links employment and gross national product. It is a dependence on the rules for computing depreciation, not on the presence or absence of depreciation as determined under a given set of rules.

64. The respective rôles of consumption and investment in promoting employment are commonly compared. Investment in this context is usually taken to be gross. But a part of the employment promoted by expenditure for consumption is represented again in the employment promoted by gross investment. What the consumer buys has been produced, in part, through gross investment. Only a

<sup>1</sup> For a comparison of ten such estimates, see Everett Hagen, "Postwar Output in the United States at Full Employment," *Review of Economic Statistics*, May, 1945.

<sup>2</sup> For the contrary view see Simon Kuznets, *National Income — A Summary of Findings*, p. 117, and Arthur Smithies, "Forecasting Postwar Demand, I," *Econometrica*, January, 1945, p. 1.

part of the consumption expenditure causes employment apart from what it causes indirectly by inducing gross investment. A comparison of investment and consumption as employment stimulators may, therefore, be misleading if investment is in gross terms.

**65.** To develop fully the principle that lies behind the use of the gross figure for durable-goods production as an index of stimulus to employment, this gross figure should be added to gross production of goods that go into inventories (in the sense given in § 62), expensed outlays that create employment, and purchases, by consumers, government, and non-residents, of services that are rendered to them directly by the producers (§ 2). The result would be national income subdivided by the events that give rise directly and immediately to employment. Then the second stage of the problem, its economic analysis phase rather than its national income phase, could be approached with the familiar question: What are the time gaps, the leads and lags, between employment and the expenditures of consumers and government by which it is induced? Expenditures which represent direct purchases of services as soon as they are performed would not be included in this part of the study, since there is no time gap there.

**66.** To return to the second of the two questions posed in § 60, a gross national product total does represent more of the money flows in the economy than a national income total appears to do. There are, however, no readily apparent limits to the aim of representing more of the money flows, short of including all of them, which gross national product, of course, does not do.

Moreover, gross national product may change while the money flow remains unchanged. A capital asset, say a machine, worth \$100 is created for concern X (a) merely by wearing down a machine belonging to firm Y to the extent of \$100; or alternatively (b) merely by drawing down the inventory of firm Y by \$100. No factor activity is assumed in either case, for simplicity in illustration, although the conclusion will be the same if \$100 of wages is paid in both cases. The money flow is the same in both cases, \$100 from X to Y (or \$200, if labor is employed). But the gross national product is \$100 in the first case and zero in the second. In general, the ratio of gross national product to the volume of money transactions will tend to be low, the larger the relative part played by inventory change, or net change in claims on non-residents, in gross national product compared with that of the other elements, which are on a gross basis.

Ratios of circular velocity of money based on a gross national product total rather than on a national income total (income velocity) may therefore not be strictly comparable from one period to another.

**67.** It may be asked whether the gross national product total gives a better view than the national income total of the pools of money that are available for lending to the government, or (in a manner explained in Chapter 8, § 10) that permit the government to engage in deficit financing from the banks without immediate inflationary pressure on prices. In the hypothetical illustration in § 61, the national income is only \$1000, and saving is zero. Since saving is zero, it might be inferred that the government has no increased opportunity to borrow as a result of the year's transactions. But this conclusion would overlook a fact that, to a limited extent, is indicated by the existence of a gross national product larger than the national income: namely, that there has been an internal shifting around of the year-beginning stock of money. Firm A held all the money (\$10,000), except a certain amount held by consumers, at the start of the year; at the end, firm B held a part of it (\$1000) and firm A the rest (\$9000). If firm B is the more ready to lend, or the more apt to hoard than to spend, the prospective borrower finds his path smoothed. The probability may be more evident if the only transaction during the year is a wearing-out of a firm's fixed assets that makes possible a sales volume of an equal amount to a consumer. There is no national income, but there is a gross national product. The amount of money in the economy has not increased, but it is held by a business firm rather than an individual. And the business firm may be more willing to lend.

But the argument cuts both ways. Perhaps the business firm will be less willing to lend. Perhaps firm B is more inclined than firm A to spend rather than to hoard. Altogether, about the only message on money flows conveyed by the excess of gross national product over national income is that there has been a shifting of money funds within the economy greater than the national income figure itself might indicate.

In other words, the gross saving of the business world (the \$1000 held by firm B at the end of the year) is larger than the net saving, but this fact does not indicate that the government can finance a deficit equal to the larger amount, under the identical equation to be considered below, "saving = investment + government deficit"

(Chapter 8, § 10). The larger saving, as computed on the gross basis, is needed to meet the larger investment, which must now be computed on a gross basis if the identical equation is still to hold.

The total shifting of funds within the business world is, of course, still greater than the gross national product figure indicates. For example, some firms sell durable assets (not carried as part of their inventory) to other firms. These transactions are not reflected in the total of gross national product. Some firms draw down inventories while others build them up.

68. In summary, it is not apparent that the gross national product, as at present computed, achieves any advantages over the net concept, national income or (Commerce Department) net national product, by adding back the depreciation charge, with the possible exception of avoiding some confusion in the public mind as to the source of current "product" (§ 55). The total for gross construction of durable capital assets, standing alone, can be more useful on occasion than the figure for net capital assets constructed, standing alone. But difficulty arises when the gross figure for durable capital assets is added to a net figure for inventory production, a net figure for production for export, and a total consumption-expenditure figure that includes part of the durable-asset total of the present or some other year. The resulting grand total seems too heterogeneous to be generally useful.

69. Table 31 presents the national income estimates of the Department of Commerce for 1929-46, with the items that must be added to national income (computed from the factor-payment approach) to get the gross national product.

Item 2, "revaluation of business inventories," is an adjustment, plus or minus, to remove the price-fluctuation element from the data on inventory change. It has already been discussed in Chapter 5, §§ 39 ff. Conceptually, this adjustment is just as proper to make in computing national income as in computing gross national product.

Item 3, "capital outlays charged to current expense," represents "an estimated portion of the outlay for producers' durable equipment not covered by depreciation allowances."<sup>1</sup> Purchase of small tools is an example. The business firms' accounts show no depreciation for these small tools, and so on, since they have been expensed (Chapter 2, § 6) upon purchase; hence the national income would be overstated if the

<sup>1</sup> *Survey of Current Business*, May, 1942, pp. 12-13.

TABLE 31

National Income, Net National Product, and Gross National Product, United States, 1929-46 (Commerce)<sup>a</sup>

(in billions of current dollars)

|  | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 1940 | 1941  | 1942  | 1943  | 1944  | 1945  | 1946               |
|--|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|--------------------|
| 1. National income, computed from the factor-payment approach            | 83.3 | 68.9 | 54.5 | 40.0 | 42.3 | 49.5 | 55.7 | 64.9 | 71.5 | 64.2 | 70.8 | 77.6 | 96.9  | 122.2 | 149.4 | 160.7 | 161.0 | 165.0              |
| 2. Revaluation of business inventories                                   | 0.5  | 3.7  | 2.8  | 1.2  | -1.9 | -0.9 | -0.6 | -0.3 | -0.7 | 0.9  | -0.4 | -0.4 | -3.2  | -2.1  | -0.2  | -0.1  | f     | -3.5               |
| 3. Capital outlays charged to current expense                            | 0.8  | 0.8  | 0.6  | 0.4  | 0.4  | 0.5  | 0.6  | 0.8  | 0.8  | 0.5  | 0.7  | 0.9  | 1.3   | 1.1   | 0.8   | 0.9   | 1.1   | 2.0                |
| 4. Income credited to other business reserves                            | 1.0  | 1.1  | 1.3  | 1.5  | 1.4  | 1.3  | 1.1  | 1.3  | 1.0  | 0.5  | 0.8  | 0.7  | 0.8   | 0.6   | 0.5   | 0.5   | 0.5   | 0.4                |
| 5. Adjusted national income <sup>b</sup> (1 + 2 + 3 + 4)                 | 85.6 | 74.5 | 59.2 | 43.1 | 42.2 | 50.4 | 56.8 | 66.7 | 72.6 | 66.1 | 71.9 | 78.8 | 95.8  | 121.8 | 150.5 | 162.6 | 162.6 | 163.9              |
| 6. Total business tax and non-tax liabilities to government <sup>c</sup> | 7.0  | 6.8  | 6.2  | 6.1  | 6.6  | 7.5  | 8.1  | 8.8  | 9.0  | 8.3  | 10.4 | 12.4 | 18.5  | 23.1  | 27.4  | 29.7  | 28.6  | 25.0               |
| 7. Adjusted net national product <sup>d</sup> (5 + 6)                    | 92.6 | 81.3 | 65.4 | 49.2 | 48.8 | 57.9 | 64.9 | 75.5 | 81.6 | 74.4 | 82.3 | 91.2 | 114.3 | 144.9 | 177.9 | 191.7 | 191.2 | 188.9              |
| 8. Depreciation and depletion charges                                    | 6.8  | 6.9  | 6.7  | 6.2  | 6.0  | 5.9  | 5.9  | 6.2  | 6.1  | 6.2  | 6.2  | 6.4  | 7.0   | 7.6   | 8.0   | 8.2   | 8.0   | 7.2                |
| 9. Gross national product (7 + 8)  | 99.4 | 88.2 | 72.1 | 55.4 | 54.8 | 63.8 | 70.8 | 81.7 | 87.7 | 80.6 | 88.6 | 97.1 | 120.2 | 152.3 | 187.4 | 197.6 | 199.2 | 194.0 <sup>e</sup> |

<sup>a</sup> *Survey of Current Business*, May, 1942, p. 12, Table 4 (1929-38); April, 1944, p. 14, Table 13 (1939-40); February, 1946, p. 7, Table 5 (1941-44); February, 1947, pp. 7-8, Tables 1 and 5 (1945-46).

<sup>b</sup> This phrase is not used by Commerce but it indicates the nature of the sub-total.

<sup>c</sup> See *Survey of Current Business*, March, 1943, pp. 25-26, Table B and notes.

<sup>d</sup> The word "adjusted" is not used by Commerce in describing this sub-total.

<sup>e</sup> Including an "adjustment for discrepancies."

<sup>f</sup> Less than \$50 million.

purchase of the tools was not charged off as an expense.<sup>1</sup> But for computing gross national product, the failure to record any depreciation does not make the purchase of small tools and similar equipment an unacceptable constituent. In principle, the accounts should be adjusted by (a) adding to each year's total national income the value of tools, and so on (1) produced in that year, or, with respect to tools that have been so included, (2) taken out of the toolmaker's inventory after sale to the user that year; (b) deducting depreciation on the tools each year in the computation of national income or net national product but (b') not deducting any depreciation in the computation of gross national product. In computing gross national product the Department of Commerce takes the necessary steps (a and b'); for national income it omits (a) and (b), thus getting a correct total over a span of years, with some change in national income as among years.

Item 4, "income credited to other business reserves," relates to reserves for bad debts (§ 24).

Item 6, "total business taxes," will be examined in detail in Chapter 7.

For 1919-38, Table 32 presents a Kuznets series of gross national product, which differs from the Commerce series conceptually in excluding all government purchases except (a) for construction and (b) to an amount equal to personal taxes (this amount is recorded as a part of consumer outlay). It also includes gross imputed rental on owner-occupied dwellings, whereas the Commerce series includes only from a third to a fourth of such rental by counting interest and repairs and not counting residential taxes, depreciation, and net imputed rent. The Commerce and Kuznets series for the overlapping years 1929-38 are, therefore, not comparable.

Table 32 also shows capital consumption and national income.

In Table 31 a sub-total (line 7) is given of the items up to, but not including, depreciation and depletion. The discussion in §§ 54-68 was concerned with the difference between this sub-total and the gross national product. The sub-total is in effect the "net national product" (Commerce), with the national income component adjusted for inventory revaluation and so on.

**70.** Gross national product (Commerce) was \$13 billion to \$19 billion higher than national income during 1929-39. In the depres-

<sup>1</sup> See Milton Gilbert, "U.S. National Income Statistics," *Economic Journal*, April, 1943, pp. 77-78.

TABLE 32  
Gross National Product and National Income, United States  
1919-38 (Kuznets)

(in billions of current dollars)

|      | Gross National Product <sup>a</sup> | Capital Consumption <sup>b</sup> | National Income <sup>c</sup> |
|------|-------------------------------------|----------------------------------|------------------------------|
| 1919 | \$73.2                              | \$8.9                            | \$64.2                       |
| 1920 | 84.9                                | 10.7                             | 74.2                         |
| 1921 | 67.4                                | 8.0                              | 59.4                         |
| 1922 | 68.4                                | 7.7                              | 60.7                         |
| 1923 | 80.4                                | 8.8                              | 71.6                         |
| 1924 | 80.8                                | 8.8                              | 72.1                         |
| 1925 | 84.9                                | 8.9                              | 76.0                         |
| 1926 | 91.1                                | 9.5                              | 81.6                         |
| 1927 | 89.6                                | 9.5                              | 80.1                         |
| 1928 | 91.3                                | 9.6                              | 81.7                         |
| 1929 | 97.4                                | 10.2                             | 87.2                         |
| 1930 | 87.1                                | 9.7                              | 77.3                         |
| 1931 | 69.0                                | 8.7                              | 60.3                         |
| 1932 | 50.5                                | 7.6                              | 42.9                         |
| 1933 | 49.5                                | 7.3                              | 42.2                         |
| 1934 | 57.4                                | 7.8                              | 49.5                         |
| 1935 | 62.4                                | 7.9                              | 54.4                         |
| 1936 | 71.2                                | 8.4                              | 62.9                         |
| 1937 | 80.0                                | 9.5                              | 70.5                         |
| 1938 | 75.1                                | 9.6                              | 65.5                         |

<sup>a</sup> *National Product since 1869*, p. 51, Table I-14.

<sup>b</sup> *Ibid.*, p. 53, Table I-16.

<sup>c</sup> *Ibid.*, p. 55, Table I-18, and *National Income and Its Composition, 1919-1938*, I, 137, Table. 1.

sion years, when national income was very low, gross national product was roughly from 30 to 40 per cent higher than national income; depreciation charges and business taxes did not decrease by much, while most of the other items fell greatly. In 1932, depreciation and depletion charges were \$6.2 billion, only \$0.6 billion less than in 1929. Business taxes declined from \$7 billion in 1929 only to \$6.1 billion in 1932; and in 1934, still a year of greatly subnormal business activity, they were actually higher (\$7.5 billion) than in 1929.

In the more prosperous years of the later nineteen-thirties, gross national product was only some 20 to 25 per cent larger than national income.

During World War II the gross national product expanded rapidly, to \$198 billion in 1944. However, national income expanded just as rapidly in proportion, so that gross national product remained about 25 per cent larger than national income. Had it not been for the far more rapid rise of business taxes (proportionately), gross national product would have drawn closer to national income, for the depreciation-depletion charge ranged only from \$7 billion to \$8.2 billion. Business taxes, which had reached \$12 billion in 1940, rose to \$30 billion in 1944, chiefly because of the introduction of the excess-profits tax.

#### X. COMPARISON OF WAR COMPONENT IN NATIONAL PRODUCT WITH OTHER COMPONENTS

71. The product approach in the computation of national income makes it evident that an increase in any one type of product must be accompanied either by a decrease in other kinds of product or an increase in total production. If the goods and services that government uses in time of war are counted as a final product, as is the custom in current computations, the record might be expected to show some increase in total output, but also a decrease in non-war products, during the war period.

72. In the United States during World War II, however, the increase in war product was made possible entirely by an increase in total output. Private net capital formation and government non-war expenditures did, to be sure, decline somewhat. But this release of resources for the war effort was more than counterbalanced by a rise in consumer expenditures on civilian goods and services. Even if the data are deflated to dollars of constant purchasing power, it appears that consumer expenditures increased during the war.

The fact that the war could be fought and privately used product could be increased at the same time was in part a reflection of the large volume of unemployment that existed just before the war.

Great Britain, on the other hand, had to force a decrease in consumer expenditures to release the manpower and capital equipment needed to produce war goods and services. Consumer expenditures in real terms dropped by some 20 per cent. Net capital formation and net increase in claims on foreigners also declined, even in money terms, and both were negative quantities during the later war years. The British data are presented in Chapter 11, §§ 3-5, after a



discussion of the definitions used by the British national income analysts.

The Commerce Department estimates of government purchase and government production of war goods and services in the United States represent the amount actually spent, inclusive of any taxes hidden in the purchase price. Consequently, the war-expenditures total is not comparable with the Commerce Department national income total, which is computed after deducting all business taxes. Such a comparison could be made only if the war-expenditures total were adjusted to remove the amount of business taxes shifted to the government. An adjustment has been made for the United States data for a short period early in the war, but not for later periods.<sup>1</sup> The British White Paper estimates make such an adjustment for total government expenditures (Chapter 11, § 3) and so are able to compare the adjusted government expenditures with national income.

The actual, unadjusted government expenditures could properly be compared with the Department of Commerce net national product, which is national income plus business taxes. However, the Department has preferred to compare them with gross national product, for the reason explained in § 55. The difference in percentage is not great, since recorded depreciation was relatively small during the war.

The definition of war goods and services follows the usual division between civilian and military life. "For instance, military use of consumption goods is considered part of war expenditures while consumption by workers in armament plants is not. Again, a capital asset purchased by private industry is not included in war output even though it may be devoted entirely to the production of armaments. . . ." <sup>2</sup> Moreover, some of the durable armaments listed under war expenditure may in post-war years prove to be of some use in the civilian economy. Neither the Department of Commerce nor the British White Paper includes any part of war expenditure under capital formation. Kuznets has experimented with various concepts wherein war expenditure is treated as capital formation.<sup>3</sup>

<sup>1</sup> Milton Gilbert and Robert Bangs, "National Income and the War Effort — First Half of 1942," *Survey of Current Business*, Aug., 1942, pp. 13, 15 (note to Table 1).

<sup>2</sup> Milton Gilbert and George Jaszi, "National Income and National Product in 1942," *Survey of Current Business*, March, 1943, p. 11.

<sup>3</sup> *National Product in Wartime*, part I.

TABLE 33

### War Expenditures and Other Components of Gross National Product, United States, 1939-46 (Commerce)<sup>a</sup>

(in billions of current dollars)

|   | 1939 | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 |
|---|------|------|------|------|------|------|------|------|
| War expenditures for goods and services   | 1    | 3    | 13   | 50   | 81   | 84   | 69   | 16   |
| Non-war government expenditures for goods and services, federal, state, and local     | 15   | 14   | 13   | 12   | 12   | 13   | 14   | 18   |
| Private construction and producers durable equipment                                  | 9    | 11   | 14   | 8    | 5    | 6    | 9    | 21   |
| Net change in business inventories  | 1    | 2    | 4    | 0    | -1   | -2   | -1   | 6    |
| Net exports of goods and services and net exports and monetary use of gold and silver | 1    | 2    | 1    | 0    | -2   | -2   | 0    | 5    |
| Consumers expenditures  | 62   | 66   | 75   | 82   | 91   | 98   | 106  | 127  |
| Gross national product  | 89   | 97   | 120  | 152  | 187  | 198  | 199  | 194  |
| War expenditures as per cent of gross national product                                | 2    | 3    | 11   | 32   | 43   | 43   | 35   | 8    |

<sup>a</sup> *Survey of Current Business*, April, 1944, p. 13, Table 10 (1939-40), and February, 1946, p. 8, Table 6 (1941-44); February, 1947, p. 7, Table 1.

Table 33 shows the components of gross national product for 1939-46. The data are in current prices. The Commerce Department has also compared 1941 with 1942 in terms of constant-value (1939) dollars, and has estimated that an increase of \$33 billion in war expenditures was accompanied by an increase in production of \$21 billion, a decrease in private gross capital formation of \$10.5 billion, and two other minor decreases: \$0.9 billion government non-war expenditures and \$0.4 billion expenditures for consumer goods and services.<sup>1,2</sup>

## XI. ADJUSTING FOR CHANGES IN PRICE LEVELS

### A. Comparing Periods of Peace and War

**73.** A comparison of national income totals from year to year or

<sup>1</sup> Gilbert and Jaszi, *loc. cit.*, p. 15.

<sup>2</sup> Mary S. Painter has estimated the gross national product and its major components, using the Commerce concepts, for 1919-28, in "Estimates of Gross National Product, 1919-1928," *Federal Reserve Bulletin*, September, 1945, pp. 872-73.

place to place requires the use of an index number of product prices, as noted in Chapter 1, § 4.

Had national income analysts tried to find the most difficult period in the history of the United States for making the annual data comparable, they could scarcely have done better than select the years 1919–45. This period embraces the boom of the late nineteen-twenties, perhaps the worst depression the country has ever experienced, a partial recovery, and World War II. For such a period it may be doubted that the national income totals or the components will ever be adjusted satisfactorily to eliminate the influence of price changes. Similar remarks apply to the data for Great Britain and other countries.

Adjustment by an index of product prices has been attempted in the United States by Kuznets and by the Commerce Department for national income and gross national product, and (by Kuznets) for each of the components of the gross national product: consumer outlay, and so on.<sup>1</sup> The latest British White Paper does not go beyond adjusting the data on consumer expenditures.

**74.** The adjustment for changes in product prices must, of course, be made under the product approach, not from the factor-payment side. And the adjustment cannot be made by using merely one index of prices, the Bureau of Labor Statistics cost-of-living index, for example. At the least, the three major categories of final product require each its own price index: consumer goods and services purchased, net increase in real assets of business firms, and purchases of goods and services by government. If gross national product is being adjusted, the second index must be applicable to the combination of net inventory changes and gross purchases (or construction by user) of durable producer goods.

For example, when the Commerce Department deflated the gross national product for 1939–44, some of the constituent items were deemed to have undergone no rise in price at all during that time. These were: (a) among government expenditure for goods and services the amounts spent on munitions, government non-war payrolls, work-relief wages, interest, and agricultural benefits; (b) net exports of goods and services and net exports and monetary use of gold and silver. This considerable amount of non-deflated product explains why the price index for gross national product that is implied in the

<sup>1</sup> *National Product since 1869*, part I.

Commerce Department computations rose by much less than the cost-of-living index.<sup>1</sup>

**75.** All the familiar problems of principle in price-index construction are encountered here. For example, shall the relative quantities of commodities used in the base-period be taken as weights (fixed-weighted or Laspeyre formula), or those in the current year (variable-weighted or Paasche formula), or shall the two indexes be averaged (Fisher's "ideal" formula, a geometric average)? What is to be done with services, where there is no transfer of a quantity that is measurable except in terms of factor activity? How are adjustments to be made for changes in quality of a tangible product or service? What of benefits that in one country are given as free goods by nature, but that in another must be produced by man's effort (heat, in the tropics and in the temperate zone)? How is the index to be affected by the disappearance of some commodities and the appearance of new ones?

The last question, especially, has given rise to involved discussions over the possibility of comparing the national income during 1940-45 with that of the pre-war years. A large part of the wartime product consisted of things never made before — atomic bombs, radar, proximity fuses, and so on — or so changed in quality if not in name as to be scarcely comparable with the pre-war product — tanks, flame-throwers, battleships, for example.

**76.** The basic problem may be illustrated by a simple hypothetical example. In a pre-war period the nation produces 100 physical units of consumer goods with 100 man-years of labor. In the war years it diverts 50 man-years to the production of radar sets, and produces just one half the former physical volume of consumer goods. During each year of the war one radar set requires two man-years of work. For one man-year of work, \$2000 is paid. The price of one unit of consumer goods consequently remains unchanged at \$2000. The price of one radar set, nonexistent before the war, remains unchanged at \$4000 throughout the war. Under these conditions, the national income analyst will be inclined to conclude that there has been no change in product prices, and that the \$200,000 national income of the war years is comparable, without adjustment, with the \$200,000 national income of peacetime.

**77.** Let the terms of the illustration be altered: The workers are much less adaptable in changing from the production of simple con-

<sup>1</sup> Cf. the criticism advanced in Frederick C. Mills, *Prices in a War Economy*, October, 1943.

sumer goods to the production of complex radar sets than the preceding illustration suggested. The country in question is chiefly agricultural, its industry largely handicraft. The fifty man-years yield only five radar sets each year of the war. The national income analyst would be just as likely in this case as in the other to conclude that the war-period product was the same as the pre-war product in real terms; the chief test he uses, the fact that the price of munitions does not change from one war year to another, is still met.

**78.** It must be concluded that even in principle there is no way of comparing the real volume of final products in a war period and a period of peace. At least this is the conclusion when final product is defined to include munitions and government product other than consumer goods and services. If the view suggested in the present volume (Chapter 7, § 52) is taken, the issue disappears. Munitions and the services of the armed forces would in that view be treated as intermediate products. In terms of the two illustrations above, national income as a measure of material welfare would decline by one half (from \$200,000 in peace to \$100,000 in wartime) in both cases.

**79.** Comparison between nations during war is, of course, possible in principle, so far as they are making the same things. If the wartime national incomes of the two countries above (§§ 76 and 77) were compared, it would be evident that the national income, including war output as a final product, of the less efficient country would be three fifths as much as that of the more efficient country if the prices were weighted by the quantities turned out in the less efficient country, or one third as much if the weights were the quantities turned out in the more efficient country.<sup>1</sup>

**80.** If the government interest payments are included in national product, the great growth of this item in wartime gives importance to the index-number problem for that item. None of the national income analysts have deflated by changes in the structure of government

<sup>1</sup> Let  $p_0$  and  $q_0$  be the prices and quantities in the more efficient country and  $p_1$  and  $q_1$  be those in the other country. The second formula is

$$\frac{\sum p_1 q_0}{\sum p_0 q_0}$$

which gives 3 in this case, and the first formula is

$$\frac{\sum p_1 q_1}{\sum p_0 q_1},$$

which gives 1.667.

interest rates, perhaps because this would be analogous to deflating generally by factor prices (hourly wage rates, for example) instead of by product prices.

81. The Department of Commerce, deflating its gross national-product total, concludes that the real increase over the period 1939-44 inclusive was "more than three quarters." In terms of current dollars the increase was 124 per cent (from \$88.6 billion to \$198.7 billion). Consequently, the Commerce Department conclusion implies an average price rise of a little more than 25 per cent. The rise in price of consumer goods and services is estimated at one third. Prices of munitions are assumed to have been constant.<sup>1</sup> The inevitable uncertainty implied in these deflation techniques is reflected by the fact that the Commerce Department has not published a table of deflated gross national product since April, 1944, reproduced here as Table 34.

To lessen the uncertainty, the Department is currently engaged in computing price indexes for each of the components of its gross national product: consumer expenditures for new commodities, consumer expenditures for services, construction, business expenditures

TABLE 34  
Gross National Product in Current and 1939 Dollars, United States, 1939-43 (Commerce) <sup>a</sup>

(in billions of dollars)

| Year | Gross National Product |              | Implicit Price Index |
|------|------------------------|--------------|----------------------|
|      | Current Dollars        | 1939 Dollars |                      |
| 1939 | 88.6                   | 88.6         | 100                  |
| 1940 | 97.1                   | 96.0         | 101                  |
| 1941 | 119.6                  | 112.3        | 106                  |
| 1942 | 152.1                  | 132.6        | 115                  |
| 1943 | 186.5                  | 155.3        | 120                  |

<sup>a</sup> *Survey of Current Business*, April, 1944, Table 1, p. 6.

<sup>1</sup> *Survey of Current Business*, February, 1945, pp. 2, 3. See also the table of munitions production, same issue, p. 24.

for capital equipment, and government purchases of goods and services.<sup>1</sup>

For national income, the Department has computed a deflated series, in terms of 1939 dollars. This series, with Kuznets' national income series in terms of 1929 dollars, is given in Table 7 (Chapter 5, § 2).

## B. International Comparisons

**82.** International comparisons of national income require the use of some exchange rate, to convert the different monetary units — dollar, pound sterling, franc, etc. — to a common basis. This initial adjustment does not necessarily obviate a further adjustment by a price index. For example, it may be found that the rental price of an identical dwelling is \$40 a month in the United States and £15 in Great Britain, while the exchange rate is \$4 to the pound sterling. The value of the British product in United States money is  $£15 \times \$4 = \$60$ , but it cannot be concluded that this British product is 50 per cent larger than the \$40 United States product; indeed, it is stipulated that the two products are identical. Evidently, the price level of this kind of dwelling accommodation is 50 per cent higher in Great Britain than in the United States. The £15, after being translated into dollars, must be deflated by a 150 per cent price index.

So large a difference in price is unlikely to exist with respect to commodities that flow in international trade, although tariffs, transportation costs, and other impediments create differences that are not negligible.

In many, if not all, countries involved in international comparisons the greater part of the national income is made up of goods and services that are not readily transportable and therefore may sell at prices that are seen to be substantially different in the two countries after application of the exchange rate. The construction of international price indexes to cover these cases has not yet reached an advanced stage. Moreover, some products used extensively in the one country are almost unknown in the other; the problem is analogous to comparing output in wartime with output in peacetime. Consequently, it appears that few if any international comparisons of total

<sup>1</sup> Indexes for the first and fourth items have been published in Henry Shavell, "Price Deflators for Consumer Commodities and Capital Equipment, 1929-42," *Survey of Current Business*, May, 1943.

national income have attained even rough accuracy. For this reason, among others, the present volume does not attempt to present such comparisons (Chapter 11, § 9).<sup>1</sup>

**83.** But the most baffling aspect of international comparisons of national income as a partial indicator of material welfare is the fact that so many consumer satisfactions that in one country have to be produced by man's effort and patience are in another country given by nature as free goods. Warmth is free in the tropics, but must to some degree be produced by man in the temperate zones. On the other hand, freedom from certain enervating diseases is costly to obtain in the tropics, but free of charge in the temperate zones.

In the present undeveloped state of analysis of this subject, no more can be said of it here. Perhaps it will prove feasible to construct product-price indexes in which either or both the numerator and denominator are constructed from series that include some zero-price items.

**84.** An international factor-price index, for constructing an index of "national cost" (Chapter 1, § 9), would probably be easier to compute than a product index, since by definition an hour of work is the same anywhere in terms of activity measured as time spent, which the factor-price index would purport to indicate.

### C. Dividing Lines Between Ambiguous and Unambiguous Answers

**85.** Strictly speaking, deflation by a product-price index cannot in practice reveal whether there has been a change in material welfare in one nation from one period to another, nor can it reveal whether a difference exists among nations. The requirements that must be met are too severe.<sup>2</sup>

In period 1, a consumer buys 10 units of article A at \$10 a unit, and 10 units of article B at the same price, thus spending \$200 altogether. In period 2, article A has risen to \$12 and B has fallen to \$9, and the consumer now buys 9 units of A and  $11\frac{1}{3}$  of B, spending \$208. He saves or dissaves nothing, so his income is likewise \$200 and \$208 in the two periods. Is he better off in the second period? Perhaps his wants have changed; in terms of economic theory, his

<sup>1</sup> See Colin Clark, "Construction of International Price Indexes for Purposes of Real Income Comparisons," Conference on Research in Income and Wealth, November, 1945 (mimeograph).

<sup>2</sup> This discussion is based largely on J. R. Hicks, "The Valuation of the Social Income," *Economica*, May, 1940, pp. 105-24.



demand schedules or indifference curves may have shifted position to an unknown degree. In that case it cannot be said whether his welfare is greater, less, or unchanged.

**86.** Even if the consumer's wants are assumed unchanged, the answer may not be self-evident if the prices of some things have increased by a greater percentage than his income has increased, and the prices of other things have increased by a smaller percentage, or have decreased. The consumer purchases one assortment of goods in the first period, and another assortment in the second. If it can be ascertained which assortment he prefers, it becomes evident in which period he is better off. His preference can be ascertained if in one of the two periods (but not in both) he has an opportunity to buy either assortment. The assortment he does buy is evidently the one he prefers. But the prices and his income may in fact change in a pattern that allows him no opportunity to choose between the two assortments, in either period. This is so in the present example. The two assortments are: 10 of A and 10 of B; and 9 of A and  $11\frac{1}{3}$  of B. In period 1, when A and B each cost \$10 a unit, and the consumer had \$200 income, he could, and did, buy the first assortment, but he did not have enough income to buy the second (this would have taken  $\$90 + \$111\frac{1}{3} = \$201\frac{1}{3}$ ). In period 2, when A cost \$12 and B, \$9, and the consumer had \$208 income, he could, and did, buy the second assortment, but he did not have enough income to buy the first (this would have taken  $\$120 + \$90 = \$210$ ).

If the period-2 data are varied so that the consumer buys 9 of A (at \$12) and 12 of B (at \$9) and has an income of \$216, he is clearly better off in period 2, since he is now able to choose between the two patterns of consumption, and decides to discard the pattern he followed in period 1.

Similarly, if the period-2 data are purchases, 9 of A and 11 of B, and an income of \$207, the consumer is clearly worse off in period 2. He could have purchased this assortment in period 1 with his \$200 income (at period-1 prices), but he chose not to do so.

**87.** The conclusions in § 86 have been extended to a group of consumers. For example, consumers as a whole may be able, in period 2, to buy, at period-2 prices, the quantities purchased in period 1, while in fact they buy different quantities. One possible pattern is that everyone is better off, in this sense, in period 2 than in period 1. To be sure, some consumers may not actually be in this

position. But if any are in fact worse off in period 2 than in period 1, others must be correspondingly still better off in period 2 than in period 1. It would then be possible, by taking from the latter persons and giving to the former, to achieve a pattern in which everyone would be better off in period 2 than in period 1. No matter whether such a redistribution is in fact made, it has been argued that the economist may describe the second situation as one that represents an increase in economic welfare.<sup>1</sup>

The considerations noted in this section and §§ 85 and 86 indicate that differences of a few percentage points in deflated national income totals may be presumed to carry no clear meaning. Larger changes may still be taken as evidence of some change in material welfare, at least if they cover only a short period of time for a given country.

**88.** In terms of index numbers, if  $E$  is the index number of money expenditure at the second date, using the first as base ( $\Sigma p_1 q_1 / \Sigma p_0 q_0$ ), the completely unambiguous increase in welfare occurs if this index number is no less than the Laspeyre price index and is greater than the Paasche price index. A completely unambiguous decrease in welfare occurs if  $E$  is no greater than  $P$  and is less than  $L$ . If  $E$  is less than the Laspeyre index but greater than the Paasche index, the situation is ambiguous. If  $E$  is greater than the Laspeyre index but less than the Paasche index, "something has gone wrong with the assumptions."<sup>2</sup>

These conclusions may be stated in terms of the opportunity to choose between two patterns of consumption (§ 86). The first conclusion is here restated, as an illustration. In period 1 the consumer spends all his income for one pattern of consumption, or market basket of goods; in period 2, he spends all of a different amount of money income on another market basket. In period 2, the cost of buying the period-1 market basket must have risen by no more than his income, if he has had an opportunity, in period 2, to choose between the two market baskets. And the cost of the period-2 market

<sup>1</sup> In Hicks's words, "the real income of society is higher in Situation II than in Situation I, if it is impossible to make everyone as well off as he is in Situation II by any redistribution of the actual quantities acquired in Situation I." *Loc. cit.*, p. 111. See also N. Kaldor, "Welfare Propositions in Economics," *Economic Journal*, September, 1939, and cf. T. de Scitovszky, "A Note on Welfare Propositions in Economics," *Review of Economic Studies*, November, 1941.

<sup>2</sup> Particularly, the assumption of unchanged wants. Cf. Hicks, *loc. cit.*, p. 112. In terms of the discussion in § 86, the consumer has an opportunity to choose between the two market baskets in *both* periods.

basket must have risen by less than his income; otherwise, having been unable to purchase it in period 1, he could not have purchased it in period 2. Thus the conditions needed to insure a choice between market baskets in the second period, which in turn is the criterion of an unambiguous increase in welfare, require that the price index weighted by the base-period quantities ( $L$ ) be no greater than the expenditure index, and that the index weighted by current-period quantities be less than the expenditure index.

89. Similar questions may be asked about the community's production in two periods. A different combination of goods is produced in the second period — more of some goods, less of others — and unit costs of production have changed by different percentages, or even in different directions. Has the amount of product increased or decreased? If the community could produce in period 2, under cost conditions of period 2, the combination of goods it did produce in period 1, and have some factors of production to spare, it must be considered to be producing more in period 2 than it did in period 1. If it could have produced, in period 1, under cost conditions of period 1, the combination of goods it did produce in period 2 and have had some factors to spare, it must be producing less in period 2 than it did in period 1. If both statements hold, or if neither does, no definite answer can be given.

90. If competition were perfect, and certain other conditions were met, the productivity index and the welfare index would give the same answer. Under imperfect competition, on the other hand, it appears impossible to define productivity in unambiguous terms.<sup>1</sup>

The welfare index, strictly speaking, is applicable only for measuring consumption, without allowance for saving or dissaving. Under the definition of income used in the present analysis (Chapter 1, § 13), the welfare index can be employed only under some assumptions concerning a valuation imputed to consumers with respect to capital goods.<sup>2</sup>

In view of these considerations, it appears that the distinction between a welfare index and a productivity index will not prove useful unless (a) the welfare index is restricted to measuring consumption, regardless of concurrent increase or decrease in the economy's capital goods and claims on non-residents, or (b) some theoretical construct for productivity is achieved that is applicable to a situation

<sup>1</sup> Hicks, *loc. cit.*, pp. 121–22.

<sup>2</sup> *Ibid.*, p. 123.

characterized by imperfect competition and varying marginal cost, a result that does not at the moment seem likely.

These remarks apply only to the private enterprise sector; the distinction between the two indexes based on the presence of shifted taxes is discussed in Chapter 7, § 25.

In any event, it is necessary to distinguish between the productivity index idea and the concept of an input index. Hicks's productivity index is not an input index, for he deflates by product prices (unit costs), not by factor prices, (Chapter 1, §§ 9-11).<sup>1</sup>

## XII. ESTIMATING DEGREE OF ERROR BY COMPARING RESULTS UNDER THE TWO APPROACHES <sup>2</sup>

**91.** Some indication of the degree of error in national income estimates is afforded by comparing the results under the factor-payment approach with those under the product approach. The totals may differ because inconsistent or incomplete definitions of national income have been adopted. They may also differ because the data for the two series — factor payments and final products — are obtained from different sources.

For any single item in national income there are at most two sources, ultimately — the records of the buyer and the records of the seller. With respect to a particular item the product approach to a national income total may utilize the records of one of the parties to the transaction, while the factor-payment approach is using the records of the other party. For example, a study of doctors' services to consumers might be made by asking consumers how much they spent on such services, and by asking doctors how much service they sold to consumers. The first set of data might be used in compiling an estimate of national net product; the second, for an estimate of factor payments.

Sometimes, as another illustration below will indicate, the product approach utilizes statements made by the recipient of the money, not the spender; and the factor-payment approach may utilize the statement of a purchaser.

**92.** If the two series could use statements from different sides with

<sup>1</sup> *Ibid.*, p. 120, footnote.

<sup>2</sup> See Harold Barger, *Outlay and Income in the United States, 1921-1938*, p. xv and chaps. III and VI; Kuznets, *National Income and Its Composition, 1919-1938*, II, chap. 12; Richard Stone, J. E. Meade, and D. G. Champernowne, "The Precision of National Income Estimates," *Review of Economic Studies*, Summer, 1942.

respect to every item, equality of the two national income totals would be a strong indication of accuracy.

However, some components of national income represent, not transactions, but mere estimates of alteration in value. Depreciation is the most common example. In the case of depreciation, there are no buyer and seller from whom two independent estimates can be obtained. Under the factor-payment approach, profit is computed by subtracting from gross receipts all expenses, including depreciation as estimated by the business firm. Under the product approach, net capital formation in plant and equipment is computed by subtracting from purchases and construction for own account the amount of depreciation, the same figure used under the other approach. Imputed gross rental of home-owners is another item that must be common to both series. Complete statistical separation under the two approaches can never be achieved.

**93.** The chance for discrepancy does not arise solely because the amount of a transaction may be recorded differently by the buyer and the seller. It may arise because of a difference in statement, explicit or inferred, with respect to the nature of the purchaser. For example, a manufacturer of packaged foods reports to the *Census of Manufactures* his total output of a certain amount. The national income estimator infers that, because of the nature of the product, all of it eventually reaches ultimate consumers and can safely be included in computing consumer purchases, after appropriate wholesale and retail mark-ups and allowance for wholesale and retail inventory changes. In fact, however, some of the packaged food is purchased and used up by a business firm. In computing that firm's profits, the cost of the food is deducted. The food (at manufacturer's value) is thus excluded in computing national income through factor payments, but included in the computation from the product approach. For some commodities (coal, for example) and some services (laundrying, for example) the national income estimator must guess at what fraction of the total output reported by the producer goes to business firms to be used up by them in the course of business, and what percentage goes to ultimate consumers (directly, or through wholesale and retail firms). Barger has shown that one quarter of the estimated total consumers' outlay in the United States in 1929 was derived by such an allocating procedure.<sup>1</sup>

<sup>1</sup> Harold Barger, *op. cit.*, p. 71.

94. As the example of the packaged foods shows, not all the items used in computing the product total are records of amounts spent, supplied by purchasers. The indirect method of estimating consumer expenditures (§ 23) is based on records of output furnished by the sellers (manufacturers). And some of the items used in computing the factor-payment totals represent, not specific amounts received and reported by a seller, but rather the amounts he spends. The business firm that purchases packaged foods for its own use in computing its profit subtracts the amount so spent. The national income total under the product approach is too high because the seller reported his gross receipts too high (more precisely, the national income estimator drew an erroneous inference with respect to receipts coming from certain sources). The national income total under the factor-payment approach is correct—in this hypothetical case—because the business firm reported correctly the amount it spent for goods used in the conduct of the business.

95. Similarly, a piece of equipment sold by a producer to a business firm may be recorded by the national income estimator who is scanning the *Census of Manufactures* data as a final product, on the supposition that the buyer will capitalize the outlay, considering himself investing in the equipment, while in fact, in his statement of profit for the year, the purchaser writes off the entire outlay as an expense.

Over the lifetime of the equipment, however, there will be no discrepancy; the same total will be subtracted in computing profits, in either case.

96. The sources for a component of national income may be different in the sense that two or more reporting agencies have drawn upon the records of a group of sellers (or buyers): for example, the Treasury Department and the Interstate Commerce Commission regarding railroads. Agreement of the results is some indication of accuracy, but of much less significance than agreement between two totals, the one based on buyers', the other on sellers', records.

97. The national income total of factor payments is built up by adding direct estimates that are made industry by industry. For a few industries for which no direct estimates of wages and salaries could be made, a "controlling total" was devised by Kuznets (Chapter 9, § 9). For other factor payments no such controlling total was available. In any case, the chance for error through omission is appreciable.

98. Kuznets and two of his collaborators who were most familiar with the source material each made, independently, an estimate of the degree of error contained in each of 520 components of the national income for every year, 1919-35. The 520 components consisted of the thirteen types of income (amount of income and number employed or engaged were shown) for each of the forty industry groups. Direct estimates were also made for certain totals: the sum of the absolute errors in the components would overstate the error in the total, since some of the errors tended to cancel each other. The error estimated was not a precise mathematical conception, but rather "the probable maximum error" — that is, "the maximum error to which the estimate was likely to be subject."<sup>1</sup> Each estimate was placed in an error class (0 to 10 per cent, with 7.5 per cent as the central value; 11 to 20 per cent; 21 to 40 per cent; and 41 per cent and over, with 60 per cent as the central value). The central value of a class became the "error margin" of the estimate falling in that class. After the three estimators had made their estimates, they consulted certain over-all comparisons that had been made with national income totals derived in other studies, and certain tests of interpolation and extrapolation procedure. As a result, they agreed to raise by 50 per cent all the margins of error that each of the three had estimated. For each component of the national income for each year, a geometric mean of the three estimators' error margins was computed.

With respect to income totals, as distinct from the number employed or engaged, a margin of error well below 15 per cent was estimated for the basic branches of manufacturing and several public utilities. Error margins from about 15 to 25 per cent were found in agriculture, mining, manufactured gas, pipe lines, trade, banking, insurance, and government. Higher margins of error were estimated for construction, water transportation, real estate, direct service industries, and "miscellaneous."

For the national income total, Kuznets concludes that "it is reasonable to infer that for the estimates of national income and number employed and engaged, the average margin of error is not much above 10 per cent, and perhaps somewhat less."<sup>2</sup> The error margin is less for the period 1929-35 than for 1919-28.<sup>3</sup>

<sup>1</sup> Kuznets, *op. cit.*, II, 503.

<sup>2</sup> *Ibid.*, II, 528.

<sup>3</sup> For a criticism of Kuznets' methods of estimating errors, see Richard Stone, "Two Studies on Income and Expenditure in the United States," *Economic Journal*, April, 1943, pp. 68-69. Stone says: "The general conclusion of this chapter is that the 'probable maxi-

99. Opinions differ on whether the error in the estimate of United States national income is smaller in the total reached under the factor-payment approach or in that computed under the final-product approach. Kuznets remains tentatively of the opinion that "greater accuracy combined with adequately comprehensive coverage still lies with national income totals based on the flow of payments and of undistributed net gains,"<sup>1</sup> while Warburton is inclined to believe that there is no demonstrated difference between the degrees of accuracy except perhaps a slight indication that the product total is closer to the truth.<sup>2</sup>

mum percentage errors' of the final totals may be put at about *20 per cent*, and this percentage will apply roughly to differences between years." [Italics mine.] Stone comments on Barger's estimates of error in *idem*, pp. 71-74.

<sup>1</sup> *National Product since 1869*, p. 9.

<sup>2</sup> Letter to the present writer.



# 7

## The Government Sector

### I. INTRODUCTION

1. When the government is taken into consideration, new problems arise in national income computation. If the national income is to be computed as the sum of payments for the factors of production, should each payment be counted before or after deducting taxes payable by the one who supplies the factor? Does it make any difference whether the tax is shifted? Does it make any difference what the tax revenues are spent for?

When national income is computed from the product side, should the sum total of products include the services distributed free of charge by the government? Does it make any difference whether some of the services merely facilitate private production (technical advice supplied to farmers, for instance) instead of being of direct use to consumers? What of the large amount of government services that are neither for consumers nor for business firms directly, like national defense and general flood control? Does it make any difference if these services are financed by borrowing?

In view of whatever answers are given to these questions, how is the government's share in the total national income to be computed? May all tax payments be added and their total expressed as a percentage of national income?

If the amount of national income produced in each industry is being computed, or if individuals are being distributed according to the size of their incomes, what are the implications of stating the income before deducting taxes paid and after deducting them?

Finally, methods of taxation differ in the total flow of money they

require to accomplish the same real task. The choice of methods may have to be made in the light of monetary conditions, if a disturbance of the general level of prices is to be avoided.

Two ways of taking account of the government sector may be distinguished, and each of them has certain advantages and disadvantages.

Under one approach, no distinction is made between different types of tax; all are treated together, and, in computing national income from the factor-payment side, either all taxes or no taxes at all are deducted in arriving at the total of profits, wages, interest, and rent. If no taxes are deducted, it will be found that some other deductions must be made from the total thus obtained, if an overstatement of national income is to be avoided, chiefly a deduction equal to that part of the government product that is only an intermediate, not a final, product. If all taxes are deducted, some additions must be made to the resulting total, to avoid an understatement, chiefly the addition of an amount equal to that part of the government product that is a final product. With these adjustments, and apart from changes in the government debt or in the government's cash balance, the before-all-taxes technique and the after-all-taxes technique give the same results, when the totals are further adjusted, as they always must be for year-to-year or place-to-place comparisons, by an index of product prices.

Under the other approach, a distinction is made between (*a*) taxes that are paid by business firms and, being in general shifted forward to purchasers, are not considered to come out of any particular factor payment, but are simply regarded as extra costs of doing business, and (*b*) all other taxes, which must be paid out of the factor payments, or from accumulated personal funds. The former, called "business taxes" by the Department of Commerce and "indirect taxes" by the British White Paper, are deducted from the concern's gross receipts before computing factor payments. The latter, "personal" or "direct" taxes, are not subtracted in computing factor payments. This approach, like the other, is capable of giving national income or product totals for year-to-year or place-to-place comparisons, provided the product-price index is adjusted to conform with it. However, the conclusion reached in the present analysis is that this method, like the other one, requires an estimate of the amount of government services that lower the cost of doing private business, if

the product-price index is to be correctly adjusted. This point need not be emphasized, for, apart from subsidies, which are easy to distinguish, it seems unlikely that there is enough change in the amount of such services to affect the totals seriously, except perhaps over a very long span of years. The issue is of more significance in international comparisons.

The second approach requires knowledge, or at least reasonable assumptions, concerning what taxes are, and what are not, shifted, in whole or in part. The present state of knowledge in this field is not very satisfactory, and if the requirement can be by-passed, as it can in computing national income as an index of change in economic welfare, something is gained. But to answer certain questions about the nation's resources it is essential to know whether certain taxes are shifted; for such questions the second approach is applicable (provided that the facts of shifting can be ascertained) and the first is not. If consumer spending on luxuries is forcibly restrained in wartime to release labor and capital for war production, it cannot be known how much labor and capital will be released unless it is ascertained how much of the consumer's dollar goes to pay a tax that has been shifted forward to him in higher prices. The curtailment of this part of his consumption will have no direct effect in releasing labor and capital for other employment. So, in general, the second approach toward government items in the national income accounts is more useful than the first when dealing with questions of change in resource allocation and similar break-downs of a total, just because it is more exacting in the knowledge it presupposes. Such questions often seem to be concerned with input rather than output (Chapter 1, §§ 9-11). It may even develop that the distinction between shifted and non-shifted taxes is primarily useful in answering questions that are cast in terms of input (§ 25).

This second approach is essentially the one utilized by the Department of Commerce in the United States and the British White Paper. However, it must be recalled that neither the Commerce Department nor the White Paper divides government product between final product and intermediate product. All government outlay, like all consumer outlay, is considered to be for final product.

The analysis in the present chapter, on the other hand, is constructed under the first approach, which does not distinguish between direct and indirect taxes, and makes no assumptions about shifting.

This has seemed the more suitable one, or at least the more convenient, for an inquiry devoted so largely to the significance of the totals as partial indicators of economic welfare, and avoiding questions of relative input.

Kuznets uses a variant of the second method, in which he does distinguish between government's final product and its intermediate product, but the basis of the distinction is not accepted here as valid. Moreover, his treatment of the government as an enterprise that can make a profit or a loss sets his approach apart as a distinct, third, method for many purposes.

In any event, the current conceptions of the things that national income data help to measure — material welfare, factor payments, consumer goods — are themselves so far from a definite statement in economic analysis that there need be no sharp insistence that some one method of accounting for the government's rôle, in national income analysis, is absolutely right and all others are wrong. The chief aim of the present discussion is to indicate the kind of steps that must be taken if errors of obvious inconsistency are to be avoided. In achieving this aim, it has seemed desirable at many points to ignore some important questions of actual market behavior — as where it is assumed that a fixed tax is shifted forward in prices — to avoid undue complexity in explaining the requirements imposed by the need for consistency.

**2.** The product dispensed by government sometimes consists of tangible goods, but usually of services. For brevity, it will be referred to here simply as services.

Government services, like the products of private enterprise, fall into two groups: those that are, and those that are not, final products. An increase in government capital goods, like an increase in privately owned capital goods, may be counted as part of the final product.

A part of the government services consists of consumer goods; and the question, how much of this part shall be included in the final-product total, may be discussed along the lines developed in Chapter 6, §§ 5–18. The general effect of such services is to relieve consumers of some expenditures. Education supplied free to those who would otherwise pay tuition illustrates this general effect. Not all consumers are relieved from a corresponding amount of expense by each of the government's consumer services, however. Some of the recipients of free education, for example, would purchase little or none of it if it were sold in the open market.

Another part of the government product consists of services to business. The services afford a free substitute for an expense the business firm would otherwise have to undergo itself. The general effect of such services is, therefore, a decrease in the cost of operation of business firms. Night-watchman service supplied free to business firms that would otherwise hire their own guards is an illustration. Again, the effect is only a general one; some of the firms would not be willing to purchase protection.

There is a third group of government services that has no counterpart in the private sector of the economy. They are neither consumer goods nor services to business. The administration of justice and the maintenance of armed forces are two examples. The services in this group have no direct effect in relieving consumers or business firms of expense. They are general-purpose services, and they are of a kind that can be rendered only by government.

3. The rules of national income computation for the government sector must produce results consistent with whatever definition of "final product" is utilized. Obtaining such consistency is not so simple as might at first appear. A helpful working rule is that if a government takes over the production or dispensing of a product hitherto produced or handled by private enterprise and does not alter any of the physical, objective features of the undertaking, the methods of computing national income should show the same total real income as before. "Real income" here means the money income after adjustment by a price index for the two periods. This test will be found somewhat inadequate for the factor-payment "profit." Moreover, it does not help with respect to the third group of government services, the general-purpose services that can scarcely be conceived of as privately produced.

The usefulness of the working rule is further limited by the likelihood that the methods by which the government finances its undertaking will alter both the prices and amounts taken of other parts of the economy's output. For example: The government takes over a certain branch of education, not altering any of the physical, objective features of the undertaking, and finances it by a tobacco tax. The price of tobacco rises, the amount consumed falls; and prices and amounts of other commodities change also as an indirect consequence. It is possible, in fact almost certain, that the national income, after adjustment by a product-price index, will not remain unchanged,

though the variation may be small. Moreover, the amount by which the national income appears to have changed will differ, according to the weights used with the price index. Indeed, as an illustration below (§ 25) will indicate, the question whether there has been any change in the national income at all may be answered differently by the different indexes.

These complications that arise from the changes in relative prices and amounts are ignored in the present chapter, aside from the analysis in § 25. The rules suggested are only elementary ones, designed to assure consistency in the simplest type of case, where the performance of a function by the government and the financing of that performance do not change both relative prices and relative amounts produced of various products. The analysis does cover cases where relative prices change, without change in relative amounts produced.

Further developments in index-number theory and in productivity and welfare concepts are to be anticipated before a satisfactory set of comprehensive rules can be formulated for the instances where the government's entry alters both relative prices and relative amounts produced. A brief comment on the distinction between productivity and welfare has been offered in Chapter 6, § 90, and the issue is further considered in § 25 below.

## II. GOVERNMENT SERVICES TO CONSUMERS

4. To isolate the basic issues without unnecessary complications, they will be analyzed in terms of a very simple hypothetical economy of six individuals: three employers and three employees.

At first, there is no government in this six-man economy. Firm A, owned and operated by individual A, employs individual A'; and so on, with B and B', C and C'. Each firm produces \$200 worth of consumer goods, pays its employee \$100, and makes \$100 profit. Each individual, whether entrepreneur or employee, therefore, receives \$100 income. He spends it all on consumer goods, dividing his purchases equally between the two firms with which he is not associated. Total sales are, therefore, \$600, wages \$300, and profits \$300.

The money transfers are shown in Chart 1. They total \$1200 in this example. The payment of profits from the concern to its owner is treated as a money transfer.

5. It is now supposed that firm A and its employee A' become the government, continuing to render the same service or produce the

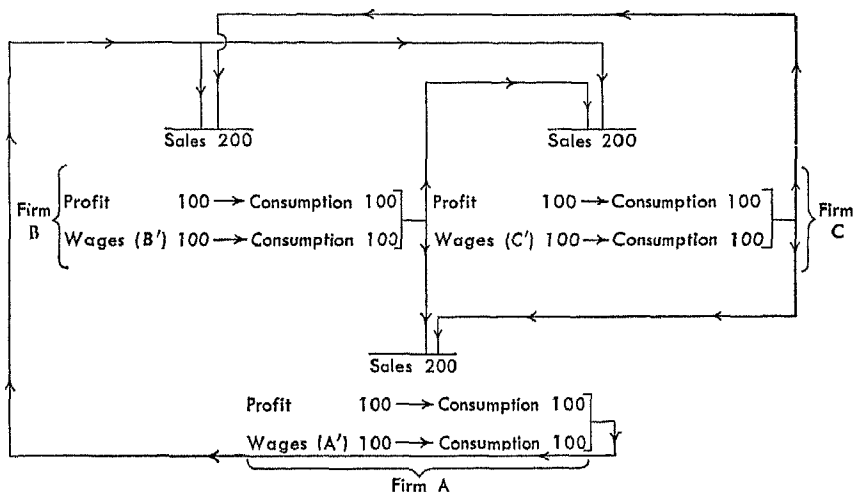


CHART 1

Money Flow: Private Economy, No Government

same product as before, but distributing it free of direct charge instead of selling it for \$200. In a physical sense the national income has suffered no change. In whatever way taxes or loans and the government expenditure are to be treated in the new accounts, they should allow the same total of national income to appear as before.

6. The combination of government expenditure and taxation may be called a "public finance measure." By "public finance measure" is meant a combination of tax and expenditure, or tax and debt retirement, or debt retirement and decrease in government expenditure — or any other single public finance change, which always has two sides to it. At this point, interest is centered on a tax-expenditure change.

Public finance measures may be divided into those that do, and those that do not, leave the amount of the real national income unchanged. The present analysis is confined to the former type of measure. Hence it does not consider, for example, changes in taxation and expenditure that alter the amount of the real national income through affecting individuals' willingness to work, or to assume risks, or through changing both relative prices and relative amounts produced of the various goods and services.

7. The simplest case occurs when the government produces a

service directly for consumers and finances it by a tax of a fixed amount on each person. The word "person" here includes both individuals and corporations; the tax may be either an individual tax, a business tax on unincorporated concerns, or a tax on corporations.

A flat tax of \$50 is imposed on each of B, B', C, and C'; each of them receives free services from the government to the extent of \$50 (cost value). The government employees (A and A') are not taxed, in this simplified example, because they are assumed to be receiving no benefit from the service they render. This assumption is made in order to preserve the economic pattern that was postulated to exist before A and A' became the government and under which they did not consume part of their own output. The assumption is made, not on grounds of realism, but merely to simplify the analysis. The general conclusions to be reached below would not be substantially affected if the terms of the problem were changed to allow the taxation of government employees.

#### A. Tax Not Shifted

8. The simplest version of this case occurs when there is no shifting of the tax. Tax-shifting is here defined as a tax-induced raising or lowering of either factor prices or product prices. Factor prices refer to wage rates, interest rates, profit rates, and economic rent. Wage rates are expressed as so much per hour or other unit of time, or, conceivably, so much per unit of effort exerted. They cannot, for present purposes, be expressed as so much per unit produced (piece rate). Profit rates are expressed as so much per unit of capital invested. Economic rent cannot be expressed as a rate, but must be taken as an absolute aggregate.

9. In computing national income from the factor-payment side, it must be decided whether the factor payments are to be counted before or after deducting the tax paid.

If factor payments are counted before deducting tax, each person is recorded as receiving \$100 income, just as before. This conclusion requires, of course, that the free services rendered to consumers by government be not counted as consumers' income. This method of computation will be referred to as the "before-tax" rule.

If factor payments are counted after deducting tax, the income of each person in the private sector of the economy will remain \$100 only if government services to consumers are included in individuals'



incomes. B's income, for example, is then said to be \$50 in money plus \$50 in free government service. This method of computation will be referred to as the "after-tax" rule. The income of each government employee is still \$100 in money.

Under either rule, the national income is the same as when A and A' were part of the private economy.

Under the product approach, the value of the product distributed by the government cannot be assumed to equal its selling price, since it has none. It may be valued at cost, as are additions to inventory and to plant and equipment of private firms. National income in this case is the sum of the products of private enterprise (\$400) and the government's product (\$200).

10. The government's proportionate rôle in the economy is correctly expressed by stating the tax revenue (\$200) as a percentage ( $33\frac{1}{3}$  per cent) of the national income. It is also correctly expressed by stating the government's product as a percentage of the national income. The government directly employs one third of the economy's resources, and produces and dispenses free of charge one third of the total product.

11. The existence of the public finance sector produces some complications when an attempt is made to distribute individuals according to size of income or to distribute income produced according to the industry in which it originates.

If the members of this hypothetical economy are distributed according to the factor payments they receive before deducting tax, the distribution table shows them each receiving an equal share of the total income, just as they were before the public finance measure. The same result is reached by distributing the income recipients according to money income after tax, plus consumer services received from government. But to ascertain how much consumer services an individual receives from government is so difficult that in practice no such computation has yet been made. Consequently, analysts of "income distribution" (distribution of individuals or families by size of income), have had to restrict their computations to money incomes before deduction of taxes, ignoring the free government services. In the present hypothetical case, where the amount of tax each individual pays is postulated to be equal to the amount of government service he enjoys, the distribution is the same under either method of computation. In real life such a coincidence of tax and

benefit would be abnormal. Serious issues concerning the meaning of the prevailing data on income distribution are thereby raised (§ 27).

**12.** In an industry-by-industry tabulation, the presence of the tax factor makes it necessary to distinguish two meanings in which an industry (or a firm) can be said to share in the production of the national income. Of the \$200 flowing into industry B from sales, in the present hypothetical illustration, none goes to purchase material or products from any other industry. Moreover, industry B receives no direct help from the government. By the use of its own factors of production it gets \$200 from consumers. In the judgment of consumers, as shown by what they are willing to pay, the industry has produced \$200 of national product (national income). But this judgment is made against the background of free government services distributed to consumers on the one hand and the tax demands of the government on the other, and can hardly help being influenced by them. Moreover, those who supply factors to industry B get only \$100 for their own use, after tax. Industry B may be said to produce \$200 of national income (with all the qualifications of the term "produce" noted in Chapter 5, § 28) in terms of what consumers are willing to pay, but only \$100 of national income in terms of what the owners of factors get in money payment for their own use. A distribution of income produced ("value added"), industry by industry, must be presented in two different tables, to answer different questions on this one subject.

Those who supply factors to industry B do indeed receive free government services of \$100. But there is no necessary connection between the amount of effort and skill put forth by the workers and employers in industry B and the amount of free services they get from government. The free services, although a part of their real income, are not income for working in industry B.

**13.** The money flows are shown in Chart 2. They total \$1200, just as before the government took over the activity from the private firm. This example illustrates the general rule that when the government takes over the rendering of a service to consumers, the total volume of money payments neither increases nor decreases, if the service is financed by a non-shifted tax. The increase in tax payments equals the decrease in purchases by consumers. The increase in government factor payments (wages) equals the decrease in private-sector factor payments. This conclusion is stated here only for an economy in which all income is spent on consumption.

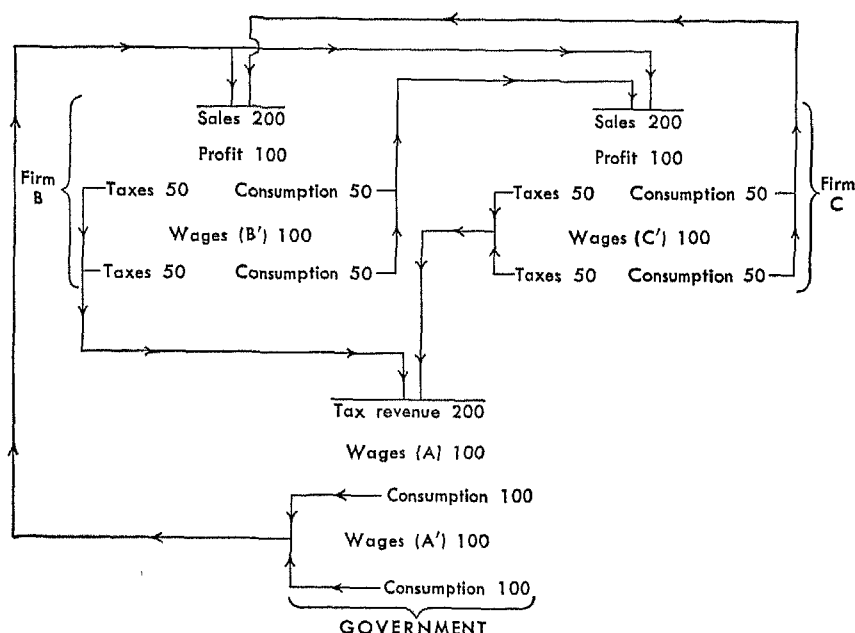


CHART 2

Money Flow: Personal Tax, Financing Service to Consumers  
(no shifting)

### B. Tax Shifted

14. An economic struggle might be expected to develop over the distribution of the tax burden and the distribution of government benefits. Each taxpayer would attempt to pass on the tax to someone else, either by selling his product or his services at a higher price, or by getting his consumption goods or his investment goods at a lower price. Each recipient of a free government service would fear attempts by others to obtain a share in this economic advantage indirectly, by forcing him to accept lower selling prices or pay higher purchase prices.

After such tax-shifting and transfer of advantage from government benefits, each person might be in the same relative economic position as before the public finance measure, receiving the same percentage share of the national income. A public finance measure that, either directly or with the aid of shifting or transfer of benefit, leaves each person with the same percentage share in the national income that he had before the measure may be described as "neutral." This term is

not intended here to convey any value judgments, any connotations of "better" or "worse."<sup>1</sup>

If the tax is unevenly laid compared with the distribution of the government service, some tax-shifting or else some loss of advantage by the particular persons receiving the government service must occur if the measure is to be neutral. This case is discussed in §§ 26–27.

But even if every person pays precisely as much in tax as he receives in services (as in the illustration in § 7), it is possible to have shifting of the tax without losing neutrality. This can occur, however, only if the shifting is "formal," not real. An illustration is a 50 per cent income tax, shifted forward to the extent of causing a 100 per cent increase in all product prices (and, as a result, all factor prices also). Another illustration is a 50 per cent income tax shifted backward so that all factor prices decrease by one third (and all product prices also). Such shifting may be called "formal shifting"; everyone's share in the national income is the same as it would have been if no shifting had occurred. Thus, the term "formal shifting" indicates that, although the shifting does change factor prices and product prices (as it must, by definition) from a situation where the public finance measure would be directly neutral, the result is still neutrality. Formal shifting is probably of little practical importance; the case in § 7 as it would appear, in terms of an income tax, under the two types of formal shifting, is described in Appendix A.

**15.** Real shifting of a tax may be contrasted with formal shifting. Real shifting is characterized by a change in at least one person's share in the national income from what it is under no shifting. This, of course, implies that the shares of at least two persons change, provided that the shifting process itself does not change the total of the national income.

Although the present analysis does not attempt to explore the limits to tax shifting, it will be convenient to use a concept of "complete shifting" by any given taxpayer, defined as shifting that leaves the taxpayer with the same amount of real income that he would have received if he had been exempt from the tax, the government raising the same amount by non-shifted taxes elsewhere. If the total national income remains unchanged, the shifting is complete if the

<sup>1</sup> A neutral measure is to be distinguished from, although it is in some respects analogous to, the concept of a neutral system, as developed by F. C. Benham and Tibor Barna. See Tibor Barna, *Redistribution of Incomes through Public Finance in 1937*, pp. 11–13.

taxpayer's proportionate share in the national income is the same as it would have been had he been exempt. Under complete forward shifting, therefore, the taxpayer gains through an increase in the price of what he sells as much as he pays in tax. Under complete backward shifting he gains through a decline in the prices of the things he buys as much as he pays in tax. "Fractional shifting" denotes an increase in the taxpayer's real income (from what it would have been under no shifting) short of what it would be under complete shifting.

If the one to whom the taxpayer shifts the tax in turn obtains relief through an increase in his factor prices or a decline in the prices of the things he buys, there may be constructed analogous concepts of complete and fractional shifting of the results of the tax, or, for short, of the tax.

This concept of completeness of shifting has been devised particularly for use in national income analysis; for other studies, as of price-cost relationships in particular fields, it may be preferable to use the customary concept, which runs in terms of equality of price-change and tax, and discusses a falling-off of sales volume, for instance, as one of the "pressures" of taxation.<sup>1</sup> Moreover, in the highly simplified numerical illustrations in the present analysis, either concept produces the same result.

16. The first kind of real shifting to be considered occurs when factor prices change without affecting the prices of any final product. Employee B', for example, shifts his flat \$50 tax forward by an increase in wages from \$100 to \$150. This is an example of complete shifting. Employer B is unable to raise his selling price. His profits before deducting his own tax drop to \$50, and his profits after tax are zero. The money income of B' after tax is now \$100. Under no shifting, his share in the total output of the economy was only one sixth, as before the public finance measure. He was able to buy  $\frac{50}{300}$ , or one eighth, of the private output, and he received  $\frac{50}{200}$ , or one fourth, of the government output. Under complete shifting his share in the private output increases to  $\frac{100}{400}$ , or one fourth; hence his share in the total output increases to one fourth. If he had been exempted from the tax his share would also have been one fourth of the private output and one fourth of the government output.

The taxpayer B' is in this instance not only better off, through

<sup>1</sup> Edwin R. A. Seligman, *The Shifting and Incidence of Taxation* (4th ed., revised), p. 11.

shifting, than he would have been without shifting; he is also better off than he was before the public finance measure was introduced. A public finance measure that would have been neutral if shifting had not occurred is in fact unneutral, because real shifting has occurred.

For this result, complete shifting is not necessary; in the present instance, even the smallest amount of fractional shifting would improve the position of B' compared with what it was before the public finance measure.

In terms of actual economic forces, the assumption of shifting would gain in realism if a percentage tax were substituted for the tax of a fixed amount, but this change would unduly complicate the illustration for its main task, which is to define concepts rather than formulate laws of tax shifting.

17. National income as the sum of factor payments may still be computed under the before-tax or after-tax method, yielding the same total as before the public finance measure. As the sum of final products, national income may still be expressed as the market value of private product plus the cost of government product. The government's share in the economy is properly expressed by the ratio of tax revenues to national income. The total of money transactions remains the same as under no shifting. No additional complications occur with respect to distributing individuals by income or distributing income by industry.

In general, then, it is possible to have real shifting without altering the rules noted in § 9 for computing national income.

18. Instead of raising his factor price, the employee B' might conceivably shift his tax backward by forcing C, from whom he purchases his consumer goods, to sell at lower prices. This result seems quite unlikely, however, since C also sells to others (B, A, and A'). For B' to shift his tax backward in a real sense, he must get a price concession from C that is not granted equally to the other consumers. This is difficult to do. The market for consumer goods is more nearly a one-price market than the market for labor. B' will probably find it less difficult to get a wage concession from B that is unmatched by simultaneous wage concessions to C' and the government employees than to get a discriminatory consumer's price in his favor. If B' does succeed in shifting the tax backward, some complication is introduced

in the national income computations, because the price level of finished products will have changed. These problems are better discussed in connection with the more realistic case of forward shifting through a rise in product prices, to which the analysis now turns.

19. The second kind of real shifting is accomplished through an increase in both factor price and product price. Employer B succeeds in shifting his \$50 tax completely by increasing his selling prices without suffering any decrease in physical volume of sales. All others, including employee B', are paid at the same wage rates or sell at the same prices as under no shifting. It will be recalled that B does not, as consumer, purchase any of his own product. Consequently, complete shifting will occur if B increases his price by 25 per cent, to get \$250 receipts. He is thereby enabled to purchase  $\frac{100}{200}$ , or one half, of C's output, and he receives one fourth of the government's output. All this is what he would have obtained if he had been exempted from the tax. This method of testing for complete shifting implies a slight change in the definition of that event as given in § 15. B's share in the total output is not quite one fourth in money terms, which it would have been under tax exemption. It is slightly less, owing to the rise in the price level caused by the increase in price of his own product. B gets  $\frac{100}{800}$  instead of  $\frac{100}{400}$  of the private output. This method of computation, however, is irrelevant from his point of view, since he does not buy his own product. Consequently, complete shifting is redefined at this point as follows: a change of price in consequence of which the taxpayer purchases the same proportion of the private output by the others and receives the same proportion of government services that he would have purchased and received if he had been exempt from the tax and none of the others had shifted the extra tax thereby imposed on them.

20. The total national income, computed as the sum of factor payments, is now higher in money terms than under no shifting. If incomes are taken before taxes, the total has been increased by the forward shifting. If they are taken after taxes, and government services to consumers are added, the total has likewise been increased by the forward shifting. Since the price level of final products has risen, an adjustment with a product-price index must be made if the before-shifting and after-shifting situations are to be compared. If the price index includes government product (at cost), it is  $\frac{550}{600}$ , and division of the factor-payment total by this index reduces it from \$650 to \$600.

Even under forward shifting, therefore, either the before-tax or after-tax rules may be followed in computing the total national income if the total is then deflated by an index of final-product prices.

On the product side, the product has likewise risen to \$650 (\$450 private and \$200 public), and deflating by the index yields \$600.

**21.** The same result is reached under the Hicks formula for a measure of "welfare" (Chapter 6, § 90). The first of the three alternative methods just noted is the one Hicks employs: factor incomes, defined to include direct taxes, plus indirect taxes (and minus subsidies and pensions, if any). Under his measure of productivity, indirect taxes are excluded from income and from the product-price index.<sup>1</sup> In terms of the present illustration, national income is \$600 deflated by an index,  $\frac{600}{600}$ , which yields the same answer as the welfare computation. This illustrates the point that Hicks's welfare and productivity measures give the same answer, even when an indirect tax causes a change in relative prices, so long as there is no change in relative amounts produced.

**22.** The fact that real shifting changes a product price, not merely factor prices, has one special effect: it alters the proportionate economic rôle of government. So long as the shifting operates within an enterprise, as in § 16, where the employee recouped his tax from his employer, the government employees are not affected by the shifting. But when product prices move up or down owing to forward or backward shifting that goes beyond the confines of an enterprise or industry, the government employees are correspondingly weakened or strengthened in their economic power, judged either by what the market is willing to pay to the suppliers of factors, or by what these suppliers consume (including free government services). This fact is illustrated in the present case when the government's proportionate share in the national income is computed by expressing tax revenue (200) as a percentage of national income (650), both computed before adjustment by a product-price index; that is, 30.8 per cent instead of  $\frac{200}{600}$ , or 33.3 per cent when there was no shifting through a rise in product prices.

Yet the purely physical aspects of production are the same as under no shifting; the government is employing the same workers, and the

<sup>1</sup> J. R. Hicks, "The Valuation of the Social Income," *Economica*, May, 1940, pp. 120-22. Cf. A. L. Bowley, *Studies in the National Income, 1924-1938*, chap. IV, "Price Movements: Index of Real Income."



physical product turned out by each private concern is not altered in quantity or quality. In this physical sense, the government's relative rôle in the economy has not been changed by the forward shifting. If this aspect of the physical situation were accepted as the test of the government's rôle, the change in the percentage from 33.3 to 30.8 would have to be considered spurious. Still there would be no evidence as to which percentage was the correct one. This dilemma reflects the familiar fact that physical measures alone cannot be used to compute aggregates in economic analysis when more than one commodity is involved. There is no way of adding the commodities except through their money values. Moreover, the money figures call attention to a physical change that is ignored when attention is concentrated on output: the change in distribution of the consumer goods. The government, considered as a group of persons (A and A'), loses command over part of the economy's output through the rise in the price level caused by tax shifting. The government's money revenue is not increased by the tax shifting, yet the general level of product prices is higher. A and A', along with C and C', have to relinquish something to B. Within the assumptions of the illustration (each spends all his income, and no one purchases his own product) it will be found that A and A' are compelled to give up part of the output of C, which still sells at the old price, and pay a higher price for an increased amount of real purchases from B. (B' is unharmed only under the assumption that he has not been purchasing his employer's product.) As with tax-shifting in § 16, this analysis is designed to illustrate concepts in the simplest manner possible, at the sacrifice of a more realistic analysis of economic forces.

In other words, since A and A', the government employees, command less economic power than before the shifting occurred, and since the government still commands only the labor of A and A', the rôle of the government in its relative use of valuable economic resources has declined. Moreover, if the decline in the government's rôle is to be measured by the change in the consumption of its employees, who in this illustration do not benefit from the unchanged "price" of government services, that decline is greater than is indicated by expressing tax revenue as a percentage of national income. The amount by which the decline is greater will depend on the kind of index utilized to measure the decrease in the real consumption of A and A'.

23. The following general conclusion therefore emerges: real shifting of a tax diminishes the proportionate rôle of the government in the economy if the shifting causes an increase in the money total of private receipts without an increase in tax revenue. Even under forward shifting, according to this point of view, the ratio of tax revenue to national income correctly reflects the proportionate rôle of the government in the economy, provided the government is spending the revenue to provide a service to consumers. It will be shown in § 31 that if the government service is not classified as one to consumers, the ratio of the revenue to national income overstates the proportionate rôle of government.

24. If the stock of money remains unchanged, shifting through an increase in product prices requires an increase in the velocity of circulation. In the example above, total money transfers have risen from \$1200 (sales, \$400; wages, \$400; profits, \$200; taxes, \$200) to \$1300 (add \$50 to sales and \$50 to profits).

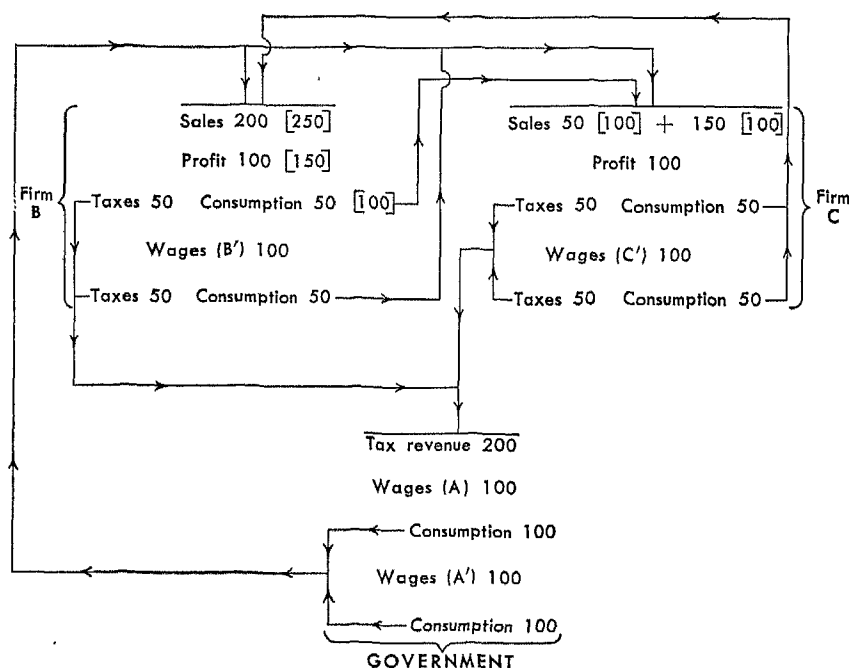


CHART 3

Money Flow: Personal Tax, Financing Service to Consumers  
(before and after forward shifting by B)

The money flows before and after shifting may be pictured as in Chart 3 (bracketed figures are after shifting).<sup>1</sup>

25. The illustration in § 19 abstracts from real life by assuming that B could sell as many units of his product at the price plus tax as he did before. Actually, since the price of B's product rises relative to C's, a decline in the sale of the former and an increase in the sale of the latter might be expected if they are competing products. The illustration will now be changed to introduce this feature. Before the public finance measure, the firms of A, B, and C each produced and sold 200 physical units. After the flat tax of \$50 on B's firm and the free government service are introduced, B's firm produces and sells 150 units, at \$1.33. C's firm produces and sells 250 units at \$1. (B and B' may be imagined as devoting each one fourth of his time to work in C's firm.)

If the national income of the second period is deflated by a product-price index, to render it comparable with that of the first, the result will differ, depending on whether the index is weighted by the quantities of the first period or those of the second. The undeflated national income of the second period still remains \$650 under either of the three rules (§ 9). When the price index is weighted by first-period quantities (Laspeyre's method),

$$(\Sigma p_1 q_0 / \Sigma p_0 q_0) = 1 \frac{1}{5}$$

|       | $p_1 q_0$          |                                     | $p_0 q_0$ |            |
|-------|--------------------|-------------------------------------|-----------|------------|
| A, A' | 1                  | 200 = 200                           | 1         | 200 = 200  |
| B, B' | 1.33 $\frac{1}{3}$ | 200 = 266 $\frac{2}{3}$             | 1         | 200 = 200  |
| C, C' | 1                  | 200 = 200                           | 1         | 200 = 200  |
|       |                    | <u>666 <math>\frac{2}{3}</math></u> |           | <u>600</u> |

national income in the second period, in terms of first-period dollars is:

$$\frac{650}{1 \frac{1}{5}} = 585.$$

<sup>1</sup> Flow charts have not been widely used in national income analysis, but their instructiveness is well illustrated by the elaborate chart showing flows to and from six sectors of the economy in J. B. D. Derksen, *A System of National Book-Keeping [in the Netherlands]*. There may be some question whether "saving" should be treated as a "money flow" from one place to another, and "capital account" as a sector, correlative with enterprises, consumers' households, etc.

When the price index is weighted by second-period quantities (Paasche's method),

$$(\Sigma p_1 q_1 / \Sigma p_0 q_1) = 1\frac{1}{12}$$

|       | $p_1 q_1$          |     |       | $p_0 q_1$ |           |
|-------|--------------------|-----|-------|-----------|-----------|
| A, A' | 1                  | 200 | = 200 | 1         | 200 = 200 |
| B, B' | 1.33 $\frac{1}{3}$ | 150 | = 200 | 1         | 150 = 150 |
| C, C' | 1                  | 250 | = 250 | 1         | 250 = 250 |
|       |                    | 650 |       |           | 600       |

national income in the second period, in terms of first-period dollars is:

$$\frac{650}{1\frac{1}{12}} = 600$$

The two methods agree at least in saying that the national income is not greater in the second period than in the first, but they do not agree on whether it has decreased.

In terms of consumer's choice, there has been an unambiguous decrease in national income, if the consumers in the aggregate are viewed as one person. The community had a choice, before the public finance measure was introduced, between the 200 — 200 — 200 pattern of consumption and the 200 — 150 — 250 pattern, and showed a preference for the former. After the public finance measure had been introduced, the community's income (\$650) was not sufficient to purchase that pattern at the new prices (\$666 $\frac{2}{3}$ ). In index terms, E ( $1\frac{1}{12}$ ) is the same as P ( $1\frac{1}{12}$ ) but less than L ( $1\frac{1}{9}$ ) (Chapter 6, § 88).

With respect to the individual consumers, the pattern of consumption in the second period leaves A, A', C, and C' clearly worse off than before (each buys only 37 $\frac{1}{2}$  units from B), and B is clearly better off (he now buys 100 units from C), while the position of B' is clearly unchanged. B has shifted his tax completely (§ 15).

If a "productivity" index is constructed as suggested by Hicks, by computing factor payments exclusive of the "indirect" (price-raising) tax, and deflating by a product-price index that uses prices minus tax, a different result is reached. The two price indexes (base-period weights and current-period weights) and the income (expenditure) index are each 1, in the present case, and no change in "productivity" is indicated.

The implications of a "productivity" index that differs from a

welfare index only because of the presence of indirect (shifted) taxes are best studied under an assumption of perfect competition, and, preferably, constant costs (Chapter 6, § 90). In the simplest possible case, where the only cost is labor of a certain grade, three indexes could give three different answers: the welfare index, Hicks's productivity index, and an input index.

The knowledge that certain taxes are shifted and certain others are not is of course quite useful in forecasting the results to follow from a reallocation of resources. If two peacetime industries each show an output with a market value of \$1,000,000, including \$300,000 taxes, and if it is desired to reallocate the factors in those industries to war production, it is important to know that (for instance) \$200,000 of the tax in the one industry is being shifted forward in higher prices to purchasers, while none of the tax in the other industry is being shifted.<sup>1</sup>

There remains the question, what message is conveyed by a year-to-year comparison of totals in terms of the productivity index, even in the simplest possible case suggested above. In any event, such an index is not intended to measure activity, or input, since it is obtained by way of a product-price index, not a factor-price index.

**26.** In the two cases considered in §§ 16 and 19, where the employee B' or the employer B shifted the tax forward, the public finance measure was neutral before shifting occurred. The shifting rendered it unneutral; the taxpayer, B' or B, became better off than he had been before the public finance measure was introduced. But at both stages, before shifting occurred and after it occurred, the taxpayer received in government service an amount equal to the tax he paid. Hence this equality of service received and tax paid cannot serve as a test of unneutrality of the public finance measure. What the equality does signify is that the public finance measure is neutral if no shifting occurs.

Likewise, if an individual receives more or less in government service than he pays in tax, it does not follow that the public finance measure is unneutral. A certain amount of shifting of the tax, or loss of the economic benefit from the government service (§ 14), may have rendered the measure neutral.

**27.** In distributing individuals according to size of income, it makes no difference whether the individual's income is computed under the

<sup>1</sup>J. R. Hicks and Albert Gailord Hart, *The Social Framework of the American Economy*, pp. 177-78, 250-53.

before-tax rule or the after-tax rule (§ 9), provided each individual receives in government service the same amount he pays in tax. But if there is no such equality, two different kinds of income distribution can be made. For example: The entire tax in the hypothetical economy above is imposed on the two private employees, B' and C', each paying \$100. Each, along with B and C, receives \$50 worth of government service. If no shifting occurs, the public finance measure is unneutral. If B' and C' each shift the tax forward fractionally, by obtaining a \$50 increase in wages, at the expense of the profits of B and C, the public finance measure becomes neutral. But in either event, the distribution of individuals by size of income is twofold:

|       | Before Shifting                                  |  |       | After Shifting                                   |  |
|-------|--|--|-------|--|--|
|       | Factor Payments Before<br>Deducting Taxes<br>(1) | Factor Payments After<br>Deducting Taxes, Plus<br>Government Services to<br>Consumers<br>(2) |       | Factor Payments Before<br>Deducting Taxes<br>(3) | Factor Payments After<br>Deducting Taxes, Plus<br>Government Services to<br>Consumers<br>(4) |
| A     | 100  | 100  | A     | 100  | 100  |
| A'    | 100  | 100  | A'    | 100  | 100  |
| B     | 100  | 150  | B     | 50   | 100  |
| B'    | 100  | 50   | B'    | 150  | 100  |
| C     | 100  | 150  | C     | 50   | 100  |
| C'    | 100  | 50   | C'    | 150  | 100  |
| Total | 600  | 600  | Total | 600  | 600  |

Two meanings of distribution of individuals by size of income must now be distinguished, similar to the two distinguished in § 12, for ascertaining the amount of income produced in each industry. One meaning carries the usual connotation of relative economic welfare. This is the distribution according to the after-tax rule: factor payments computed after deducting taxes, plus the government service rendered to the consumer — columns (2) and (4) above. The other distribution answers this question: What is the market willing to pay for the several factors in terms of their ability to help producers satisfy the wants of consumers? After shifting occurs, accompanied,

presumably, by a change in the pattern of consumer spending owing to the changes in relative prices of products, the market is evidently willing to pay three times as much for the service rendered by B' as it is for the service rendered by B. But in terms of command over the resources of the economy for his own use, including the services supplied to him by government, B' receives only the same amount as B. The introduction of government into national income analysis destroys the identity hitherto postulated between the market value of a product and the sum total of the payments received, and available for spending or saving, by those who supply the factors of production.<sup>1</sup>

As a convenient way of expressing this distinction between what the market pays and what the recipient gets, it is tempting to say that B' produces three times as much as B but receives for his own use only the same amount as B. The word "produce" must be understood in so special a sense, however, that its use in this connection is probably misleading. Even under perfect competition, the most that can be said is that the rate of pay per unit of the factor (one man-hour of a particular kind of skilled work, for example) is equal to the value of the product that would be lost if just one unit of the factor were withdrawn and all other factors were left unchanged in amount, time being allowed for the remaining factors to readjust their form to the most efficient new combination. And under conditions of imperfect competition, or with respect to factors that are not sold in small units on the market, the implications of the payment as a measure of the amount produced by the factor are more complex.

28. The computations of national income by Kuznets, the Department of Commerce, and in the British White Paper are based on principles somewhat different from those suggested above (§§ 8-23), for reasons to be discussed later (§§ 37 ff.). Commerce and the White Paper make no distinction between government services to business and those to consumers. Kuznets makes the distinction indirectly. However, if the tax that finances the service to consumers is considered to be a personal tax as contrasted with a business tax, these differences in principle lead to no differences in the national income total. All three authorities, under the factor-payment approach, count

<sup>1</sup> This identity is of course not the same as that at issue in the question whether the sum of the marginal products of the factors, each multiplied by the amount of the factor, just equals the product. See George J. Stigler, *The Theory of Price*, pp. 130, 141, 178-79, and *Production and Distribution Theories*, chap. XII.

factor payments before deducting personal taxes, although there has not been complete unanimity on how to classify the corporation income tax (§ 44).

In effect, they utilize the before-tax rule as stated above. From the product side, all three computations reach the same result as that in § 9: market value of private final product plus cost of the government service. Kuznets, however, includes the government service, not as a government purchase of goods and services, but as a part of consumer purchases. Consumers are considered to purchase consumer services from the government in an amount equal to the personal taxes they pay.

In §§ 19–25, the tax was assumed to be shifted forward in product price. In these instances the procedure followed by Commerce and the White Paper would not give the same results in absolute money totals as the rules suggested in § 9. Because the tax is shifted forward, it is no longer a personal tax, in the view of Commerce and the White Paper. It is instead a business tax (indirect tax), and must be subtracted in arriving at the total of factor payments. Kuznets would presumably still define it as a personal tax if it were imposed on the individual as such, not on the business firm as a separate legal entity. Whether the differences in absolute (undeflated) totals would also be reflected in the totals as adjusted by a product-price index is a question that is deferred to § 45.

### III. GOVERNMENT SERVICES TO BUSINESS

**29.** Up to this point it has been assumed that the service the government renders is one to consumers. It may instead be a service to business firms, which relieves them of an expense they would otherwise have to undergo, thus (a) increasing their profits, or (b) causing them to raise wages, rents, and so on, or (c) causing them to lower their selling prices. In terms of the example in § 4, it may be supposed that, starting with all six persons in the private-enterprise sector, the employees — A', B', and C' — become the government and supply their services free of charge to the business firms A, B, and C. Their salaries are defrayed through taxation.

**30.** The first case considered is that in which A, B, and C lower their selling prices, so that their receipts decrease just as much as their costs drop through the free government service. All six of the consumers benefit by the lowering of price.



For an unchanged physical output, each firm collects only \$100 in sales instead of \$200. Each entrepreneur out of his \$100 profit (he now has no direct wage cost) pays \$50 in tax and spends \$50, split equally between the products of the other two firms. Each of the three government employees receives \$100 wages, and, since each of them benefits indirectly from the government's activity, he is taxed \$50, in contrast to the assumptions of § 7. The price level of private products declines from 100 to 50 (there is no government product).

If national income is computed as factor payments before deducting taxes, it totals \$600. Since the price level has fallen, an inflating index will be used in comparing this total with that for a preceding period. The national income for the second period, in first-period dollars, becomes \$1200, instead of the \$600 it should be. The remedy is to subtract from the total of factor payments (computed before deducting taxes) an amount equal to the sum spent on government services to business. The remainder may then be adjusted by the price index.

If national income is computed as factor payments after deducting taxes, the result (\$300) may be adjusted by the index of product prices, and the correct total will be reached.

The before-tax rule is consequently modified to read: The national income may be computed by adding all factor payments as reckoned before deducting any taxes, and by subtracting an amount equal to the cost of the government services to business. The after-tax rule remains as given in § 9: Compute factor payments after deducting all taxes, and add to the total an amount equal to the cost of the government services to consumers.

From the product approach, the computation remains as before (§ 9): Add the value of the final products of private enterprise (\$300) and the value of the final product of government (there is no such product in this case), and adjust by the product-price index (one half), to give the total national income (\$600) comparable with that of the other period or nation.

**31.** The government is evidently using one half of the resources of the economy. But this fact is not revealed by the ratio of tax revenue to national income, computed under the rules suggested above, if both these quantities are taken in current prices. For when the rules in § 30 are applied, the national income is only \$300, before adjustment by the price index. The ratio of taxes to national income appears to be 1. The correct ratio can be reached by comparing tax

revenue either with national income as adjusted by the price index, or with unadjusted national income plus the expenditure of government on services rendered to business.

The total money flow in the economy is: consumers to firms, \$300; firms to owners, as profit, \$300; owners to government, in tax, \$150; government to its employees, in wages, \$300; employees to government, in tax, \$150. The total is \$1200. Under no shifting of a tax imposed to supply services to consumers, it was likewise \$1200 (§ 13). The following rule appears: The use of government tax revenue to finance the free distribution to business of services that it would otherwise have to purchase itself, and which allow it to lower its selling prices, does not alter the total volume of money transfers in the economy. More generally: The total of money transfers is unaltered if the new service, whether to consumers or business, is financed by a non-shifted tax.

**32.** If individuals are distributed according to their incomes, the peculiar nature of the benefit that government renders to consumers in this instance becomes apparent. Factor payments after taxes are only \$50 for each of the six members of the economy. There is no government service direct to consumers to be added. But there is an indirect benefit: lower prices of private products. An after-tax computation must add to the individual's income an allowance for this, either directly or by adjustment through a price index. If each individual benefits equally through the lowering of private-product prices and pays the same tax, a general price index can be applied to every individual's income. But in real life such equal distribution does not obtain. The government's services to business affect especially certain businesses, turning out products purchased especially by certain consumers. Product prices fall in certain parts of the private economy, but not in all. Consumers are benefited unequally. And the taxes imposed to finance the services to business cannot be laid, except by coincidence, on the same pattern as the indirect benefits to consumers. All this does not matter in computing the distribution of individuals by size of income in the sense of the market's judgment of relative worth of factors in the economic process (§ 27). But a distribution in the sense of relative economic welfare is impossible to compute with the data currently obtainable, to the extent that government services to business result in a lowering of private-product prices. There is some reason to believe, however, that such services do not

form a substantial part of total economic activity in the United States or Great Britain, aside from subsidies (§ 59).

The distribution of national income according to the industry in which it originates is not made more difficult to compute by the presence of government services to business. The decrease shown in the value added by the private concern is a real decrease, and is offset in the accounts by an item, "value added (to private products) by government."

**33.** The second case considered is that in which the free government service to business results, not in a lowering of selling prices, but in increased profits (or wages, or other factor payments). Firms A, B, and C take in \$200 each, all of which is profit. The three government employees each receive \$100 in wages. The tax remains at \$50 on each of the six persons. The national income, computed under the before-tax rule as modified in § 30, is \$600 profits plus \$300 wages minus \$300 government services to business, or \$600. No adjustment by a price index is needed, since product prices have not changed. Similarly, the after-tax rule yields, as factor payments after deducting taxes, \$450 profits after tax plus \$150 wages after tax, or \$600. Likewise, the approach from the product side continues to give the correct total.

**34.** The proportionate rôle of the government in the economy was one half when the benefits of the government's service were passed on to consumers in lower prices (§ 31). But now it is only one third, judged by what the market is willing to pay to the suppliers of the factors, for the government employees get only \$300 before taxes compared to the \$600 before taxes obtained by the three entrepreneurs. Indeed, it is only one fourth, if the test is factor payments after taxes, plus government services to consumers. As in § 22, the government's relative economic rôle has been altered by an alteration in relative economic power. Something (unspecified) has happened to give the entrepreneurs more relative power than before; otherwise competition would have kept them from retaining for themselves the cost-lowering benefits of the government's free service.

But the ratio of tax revenue to national income is 300:600, not one third, or one fourth. As in § 31, this ratio overstates the government's relative economic rôle. If the national income is adjusted by adding back to it an amount equal to the expenditures of government on services to business, the ratio becomes one third.

**35.** The total flow of money is: consumers to firms, \$600; firms to owners, as profit, \$600; owners to government, in tax, \$150; employees to government, in tax, \$150; government to its employees, in wages, \$300 = total, \$1800. Evidently, if the price level of products is to remain unchanged despite the government aid to business, a larger stock of money or a faster monetary circulation is required.

No new points are raised by this illustration for income-size or type-of-industry tabulations.

**36.** The rules suggested above (§ 9) for computing national income may be restated at this point for comparison with prevailing methods of computation.

First, the two alternative rules for computing from the factor-payment side:

*Before-tax rule:* Add all factor payments before subtracting any taxes at all, then subtract an amount equal to the cost of the government's services to business.

*After-tax rule:* Add all factor payments after subtracting all taxes, then add an amount equal to the cost of the government's services to consumers.

Second, the rule for the product approach: Add consumer purchases, net increases in private inventory and other private business assets, net increase in claims on non-residents, and government services to consumers.

With either method, use an index of product prices for year-to-year or nation-to-nation comparisons.

**37.** Kuznets, the Commerce Department, and the British White Paper do not utilize either of these rules, since they prefer the second approach noted in § 1, which distinguishes personal, or direct, taxes from business, or indirect, taxes. Moreover, they do not distinguish directly between government services to consumers and government services to business.

**38.** Kuznets makes the distinction in principle, but does so indirectly, and in a way that does not yield the same results as does the direct application of those rules. He assumes that the amount of personal taxes paid measures the volume of government services to consumers. And he assumes that the amount of business taxes paid measures the volume of government services to business. These assumptions, however, can scarcely be considered valid, for reasons discussed below (§ 43).<sup>1</sup>

<sup>1</sup> These assumptions were adopted in the National Bureau of Economic Research

If total taxes, business and personal, exceed total current expenditures, the excess is entered, in the approach from the factor-payment side, as a "profit" of government. If total taxes fall short of total current expenditures, the deficiency is entered on the factor-payment side as a government "loss." In this way Kuznets' totals on the product side and the factor-payment side are kept in balance. The deficit on current account is in Kuznets' eyes an indication that so much of the expenditures produced no product at all, nothing of economic value, either for business or consumers (Chapter 5, § 57; Chapter 6, §§ 19-20).<sup>1</sup>

Some government product is sold for a price instead of being financed by taxation; the service of the post-office, and public power, for instance. Here, the concept of a government profit or loss, to be included in national income with the profit and loss of private enterprises, might seem applicable in a way that it does not for governmental activities in general. The Commerce Department, however, includes the surplus of a government enterprise only in its national product total, not in national income. The surplus is "in effect an increase of government receipts," and a deficit, "an increase of government expenditures." Consequently, "enterprise surpluses are treated like indirect taxes and deficits like subsidies rather than included as profits and losses in the national income."<sup>2</sup> This is probably the safest procedure to follow in general. The instances of "commercial" profit by government that are quantitatively important — for example, the profits of state liquor-store monopolies in the United States, and national tobacco monopolies abroad — are clearly an indirect exercise of the taxing power. And deficits, as on housing ventures, are usually incurred deliberately, in a way that a private-business deficit is not. In the before-tax and after-tax rules developed in this chapter, "taxes" will be understood to include surpluses of government enterprises, and "subsidies" will include their deficits.

39. The Department of Commerce and the British White Paper define "national income" as the sum of factor earnings, and believe that such earnings are best measured before deducting taxes levied

about 1922. Cf. W. I. King, O. W. Knauth, F. R. Macauley, and W. C. Mitchell, *Income in the United States*, I, 48-56, and II, 5-6.

<sup>1</sup> Kuznets, *National Income and Its Composition, 1919-1938*, II, 428-30; and his *National Income — A Summary of Findings*, pp. 131-34.

<sup>2</sup> U. S. Department of Commerce, *National Income and Product Statistics for the United States, 1929-46*, p. 9 (mimeograph).

on them. This view requires, of course, a distinction between taxes on factor earnings, as contrasted with taxes that are imposed on a business concern as such and are not to be associated with any particular factor. The distinction runs in terms of taxes on business firms that are, in general, well known or reasonably assumed to be shifted forward to purchasers in higher product prices.<sup>1</sup> Thus a cigarette manufacturing company pays an indirect tax of so many cents per package of cigarettes produced, a tax that is not considered to be levied on, or to come out of, the earnings of any factor of production, but is merely a wedge driven by the government between factor cost and market value.

The problem of making approximately correct assumptions about shifting is not discussed in the present analysis, but a few points on what may be meant by a tax on a business firm, as distinguished from a tax on an individual, are developed in § 44.

The definition of business, or indirect, taxes as those that are shifted forward must be kept in mind in constructing hypothetical examples of the totals that may result when the method of financing a government outlay is assumed to change. For example, if the view held by Commerce and the White Paper is criticized on the grounds that it allows a mere change in the method of financing (from direct tax to indirect tax), all other things remaining unchanged, to alter the amount of national income, the reply will be that by definition other things could not remain unchanged; the introduction of an indirect tax must alter selling prices.

40. On the product side, Commerce and the White Paper do not divide government services into final products and intermediate products. They include all of them as final products, and reach a total called "net national product" (Commerce) or "net national product at market value" (White Paper).<sup>2</sup> This total is larger than the national-income, factor-payment total, by the amount of business tax revenue minus subsidies by the government to business, with cer-

<sup>1</sup> White Paper, Cmd., 6623, p. 7. In the unrevised Commerce series, i. e., the one published through 1946, the corporation income tax and excess-profits tax were also counted as business taxes. This point is of substantial quantitative importance in a comparison of that series with the British White Paper series, which have never deducted either tax.

<sup>2</sup> The latest White Paper (Cmd. 6784, April, 1946), however, does not present a total for "national product at market value" in any of its tables, in contrast to the White Paper of a year earlier (Cmd. 6623, p. 14). Like the Department of Commerce, it now prefers a gross total, inclusive of depreciation. See Chapter 11, § 2.

tain minor adjustments not relevant to the present discussion. In computing factor payments, business taxes are subtracted, and subsidies to business are included. In computing product, market values are used, which of course are diminished by subsidies and increased by indirect taxes.

Consequently, these computations do not show an identity between the national income total and the product total at market values. The view that they reflect is that the identity cannot exist, because the two sides are being measured at two different price levels: a factor-price level and a market-price level, separated by indirect taxes minus subsidies.

The British, but not the Department of Commerce, reduce the product total to the factor-price level by subtracting, from the "net national product at market value," the total of indirect taxes minus subsidies. The result, called "net national product at factor cost," equals the sum of factor payments, and is therefore also called "national income." This deflated product total is not to be taken as excluding any of the government services from the total of final product. Instead, every type of final product, government and private, is implicitly restated in total in terms of another, lower, price level. Similarly, the total of factor payments, the national income, as computed by Commerce and the White Paper, when viewed as the payments made for product, imply that the product in question includes all government services. No government service is excluded as being an intermediate product.

The gross national product total computed by Commerce also includes, of course, all government product.<sup>1</sup>

The official estimates of national income in Germany published in the nineteen-thirties used what was in effect a third alternative statement of the rule suggested in § 36 for computation from the factor-payment side. As a first step, business taxes only were subtracted in computing factor payments. Then the personal-tax total was compared with a direct estimate of the amount of government services to

<sup>1</sup> The Dominion Bureau of Statistics in Canada, likewise including all government product as final product, supports its decision on the ground that, with respect to those government expenditures that are clearly for a service to private business (a highway used by business vehicles, for instance), the final product total would be understated if all such services were excluded, for "industry does not pay directly for the use of the road, and there is no need to assume that the value of this service is included in the revenues from sales of private industry." *National Accounts: Income and Expenditure, 1938-1945*, p. 12. Cf. the view taken in §§ 29-33 above.

consumers. If the latter was the larger, the difference was added to national income, under the somewhat cryptic title of "missing taxes" or "taxes not included in private income." If the services to consumers was the smaller total, the difference was subtracted. Consequently, it was a distinction drawn between types of expenditures, not types of taxes, that influenced the national income total.<sup>1</sup>

41. The amounts involved in "business taxes" or "indirect taxes" are substantial. The Department of Commerce data indicate business taxes of \$7 billion in 1929, and in the latter nineteen-thirties they range between \$8 billion and \$10 billion.<sup>2</sup> The British White Paper estimates for 1938 show "indirect taxes" of £638 million and "direct taxes" of £545 million; for 1944, £1480 million and £2104 million respectively.<sup>3</sup> These two series are not comparable; the British exclude from indirect taxes both the excess-profits tax and the normal income tax collected from corporations. In its revised series, the Commerce Department, too, will exclude the excess-profits tax and the corporation income tax from "business taxes" (§ 44).

All real estate taxes are included under "business taxes" by Kuznets and under "indirect taxes" in the British estimates (local "rates"). The Department of Commerce, up to the present, has split the state and local property tax into that part paid by individuals and that paid by business firms. Only the part paid by business firms has been subtracted in computing national income (factor-payment approach). The non-deduction of taxes on owner-occupied homes tends to overstate the national income, relatively, but this is more or less counter-balanced by another Commerce Department practice: the non-inclusion of net imputed income from home-ownership. The revised Commerce series reverses practice on both points; it includes net imputed income from home-ownership and counts taxes on homes as business taxes.

42. The disadvantages of the methods used by Kuznets, the Commerce Department, and the British White Paper pose a difficult choice for the computer of national income. And the methods suggested in the present analysis also exhibit disadvantages, chiefly the need for

<sup>1</sup> Additions to the public debt were deducted, and government net capital formation and transfer payments added (cf. § 64). Surpluses of government enterprises were added, and other minor adjustments made. *Das Deutsche Volkseinkommen vor und nach dem Kriege* (Einzelschriften zur Statistik des Deutschen Reiches, no. 24), pp. 14-16, 29, 55-60.

<sup>2</sup> Milton Gilbert and R. B. Bangs, "Preliminary Estimates of Gross National Product, 1929-41," *Survey of Current Business*, May, 1942, Table 1.

<sup>3</sup> Cmd. 6623, Table 33.



computing how much of the government's expenditure consists of services to business.

The Kuznets method suffers from the assumption that the business-tax revenue measures the government services to business, and the collateral assumption that the revenue from personal taxes measures the government services to consumers (§ 43). The method used by Commerce in its series published hitherto relies upon a legal distinction for its definition of a business tax (§ 44). The method used by the White Paper, and in the revised Commerce series, excludes no government product as an intermediate product, and hence, at least from some points of view, is sure to overstate the total of final product. It assumes that the national income computers know what taxes on business firms are shifted forward and what are not. And it somewhat complicates the index-number problem (§ 45).

43. The assumption that the amount of government services to business equals the amount of business taxes seems too wide of the mark to be acceptable. Approximations are necessary in much of national income computation, but it is to be feared that this method cannot give even an approximation. The most sizable taxes collected from business in most countries are those on liquor and tobacco, which are clearly intended to be passed on to consumers. Except by coincidence, they do not bear even a remote relation to the services government renders to business in general or to these businesses in particular. The assumption that the volume of business taxes measures the volume of services to business is defended on the ground that there is no better method of ascertaining the amount of those services.<sup>1</sup> But even a rough guess would be preferable to a mechanical method that rests on assumptions so obviously invalid. It seems likely, for example, that direct estimates, like those of Colm, Warburton, and Nelson and Jackson, come closer to the true amount than the figure reached under the business-tax personal-tax rule.<sup>2</sup>

<sup>1</sup> Kuznets, *National Income and Its Composition, 1919-1938*, II, 428.

<sup>2</sup> Gerhard Colm, "Public Revenue and Public Expenditure in National Income," *Studies in Income and Wealth*, I, 210-11; Clark Warburton, "Three Estimates of the Value of the Nation's Output . . ." *Studies in Income and Wealth*, III, 328-29, 359; R. W. Nelson and Donald Jackson, "Allocation of Benefits from Government Expenditures," *Studies in Income and Wealth*, II (National Bureau of Economic Research). See also *Das Deutsche Volkseinkommen vor und nach dem Kriege* (Einzelschriften zur Statistik des Deutschen Reiches, no. 24), pp. 56-60; *Statistisches Jahrbuch für das Deutsche Reich*, 1931-38; Erik Lindahl *et al.*, *National Income of Sweden, 1861-1930*, part I, pp. 11-12, 226-31, and part II, pp. 554-72.

For the view that a division of government output between final products and intermedi-

44. Business taxes might conceivably be defined in any one of a number of ways. They might include all taxes the actual payment of which is made by a business firm, even when it is acting only as agent for others. That part of the federal personal income tax which is deducted at the source, and paid by the employer to the Treasury on behalf of the employee, would then be a "business tax." The definition utilized by Kuznets and the Commerce Department does not extend so far in that direction. At the other extreme, the term "business tax" might exclude all taxes paid by the business firm as agent, legal or economic, for others. Then the concept would exclude not only the individual income tax deducted at the source, but also all those excise taxes which, although the business firm is legally liable for them, are clearly intended to be a burden on the consumer. The gasoline taxes are a good example; some of the oil companies are so sure of the legislator's intent, or perhaps are so sure that complete shifting actually occurs, that in their published accounts they exclude from their gross receipts and likewise from deductions from income an amount equal to the tax. But Kuznets and the Commerce Department do not go so far in this direction either. They apparently accept a legal liability test; if the law imposes sole liability for payment of the tax on the business firm, it is a business tax. (This interpretation of their position has to be modified slightly for several state retail sales taxes, where, although the business firm is primarily liable, the consumer is also liable.) The federal corporate income tax has been a business tax in current national income accounting, even though it may be intended primarily to tap stockholders' incomes. The excises are clearly business taxes. The statements in this paragraph refer to the method hitherto employed by the Department of Commerce. With respect to its revised series, which exclude corporate income and excess-profits taxes from business taxes, the remarks on the British White Paper in § 45 apply.<sup>1</sup>

45. The method followed by the British White Paper requires some knowledge, or some assumption, as to which taxes are shifted and which are not. Such a requirement is a serious drawback, in view of the lack of knowledge on this subject. In principle, it even involves

ate products is not feasible by any method developed so far, see George Jaszi, *The Concept of National Income and National Product, with Special Reference to Government Transactions*, chap. III.

<sup>1</sup> Edward F. Denison, "Report on Tripartite Discussions of National Income Measurement," *Studies in Income and Wealth*, X, p. I-11 (mimeograph). See also *ibid.*, pp. I-83 — I-88,

knowing whether the shifting is fractional or complete, and, if fractional, how much. In practice, these refinements are not taken into account. Once the knowledge concerning shifting is gained or the assumption is made, the rule has certain advantages in studying the distribution of the national income for one year, to show how much of the total each of the factors of production "produced." It makes possible a third kind of distribution of individuals by size of income, a distribution that might be headed "factor rewards as judged by consumers and according to relative efficiency of factors, disregarding pure agency transactions in transmitting tax revenue to government."

The British method has some special implications for the construction of a price index. A comparison of national income totals among years or between countries will almost always be made only after inflating or deflating by an index of product prices (or an exchange rate). This will be done, regardless of which method is adopted in treating tax payments, for there will be so many disturbing factors affecting price levels that no comparison without adjustment by a price index or an exchange rate can mean much.

If a tax is imposed to finance a service to consumers and is shifted forward in final-product prices, the deduction of shifted taxes in computing national income does the same thing as a deflating price index. Consequently, when the price index is applied, the national income will show a decline from what it would have been if the government had not taken over the dispensing of the consumer service; but no real decline will have occurred. This spurious result can be avoided, of course, by adjusting the price index; the articles subject to the indirect tax would be included in the price index at their prices ex-tax. But if the indirect tax is financing a government service, not to consumers, but to business firms, which lowers their selling prices or increases their profits, such an adjustment of the price index would show a rise in the national income, just because the government took over the dispensing of a service to business firms. In this instance the deflating index is correct, without any adjustment. Consequently, to decide whether the price index should be so adjusted (by including the taxed article at its price ex-tax), it is necessary first to decide whether the government service is or is not one that reduces the cost of doing business. But this is a distinction which is not made in the computations of either the British White Paper or the Department of Commerce.

For those who believe that there is a second class of government intermediate product, one which does not necessarily lower the cost of doing private business, the general-purpose services to be discussed in §§ 46 ff., the occasions on which the British and Commerce procedures will not give a correct answer become more numerous.

The problem just noted with respect to a shifted tax levied to pay for a service to consumers has its parallel in a non-shifted (personal) tax levied to finance a cost-lowering service to business. The refusal to deduct a non-shifted tax in computing national income will tend to leave the factor-payment total as large as it was before. But without an adjustment of the deflating index, the national income will appear larger than before, because of one or the other of the two consequences that accompany a cost-lowering service to business: lowered product prices or larger profits (or larger payments to other factors). If product prices drop, an ordinary inflating index applied to the unchanged factor-payment total raises it above its former level. Higher money profits do the same thing directly. The increase in national income that appears is not real, and can be avoided by stating the product prices inclusive of the government-service element.

The qualifications stated in the immediately preceding paragraphs would apply to Kuznets' method also, except that presumably he would deny the possibility of a shifted tax financing a service to consumers. Such a tax would apparently be a business tax, hence conceivable only as a means of financing a service to business. Similarly, his system would not allow of a non-shifted tax financing a service to business.

#### IV. GENERAL-PURPOSE SERVICES OF GOVERNMENT

**46.** A large part — perhaps a major part — of government's service is neither a consumer good nor a service to business. Such a service is not enjoyed by consumers for its own sake. And it cannot be conceived of, at the given time and place, as being produced by private enterprise; hence it cannot be said to supply business firms with a free substitute for some item of cost. Examples are maintenance of the armed forces and a system of law courts. These may be termed "general-purpose services." The list of these services varies with time and place.

Some government departments perform more than one of the three types of government service: the fire department lowers the insurance

premiums on business premises as well as for residences. Some government services are a compound, rather than a mixture, of services: compulsory elementary education is in part something enjoyed for its own sake, hence a service to consumers, but most school-children might be inclined to classify it along with the armed forces and the law courts.

47. A country that can reach the same results as another with less outlay on these general-purpose services is presumably to that extent better off in the sense of material welfare. Of two countries otherwise alike, the one whose population is the more law-abiding, and which can therefore devote more of its services to supplying things that are liked for their own sake, is presumably enjoying a greater degree of material welfare; hence it may be argued that the national income total should reflect that fact. The added fuel that must be burned in the government offices of countries in the temperate zone compared with those in the tropics reflects an economic disadvantage. The money that a government must spend on building dikes and pumping to keep out the sea represents an economic burden, not a benefit. If the factor payment or product is used as an indicator of total activity or cost (Chapter 1, § 9), the work in the coal mines and on the dikes and pumping stations is properly included. But if national income is computed, not national cost, then the work devoted to heating government offices and keeping out the sea would appear to be not includable.

48. If similar difficulties arise in private production, adjustment by an index of product prices will give the correct total of national income as an indicator of material welfare. The private concern raises the price of its product if it needs to burn more coal to heat its offices. And if it does not raise its selling price, its profits decline, and hence national income declines in this way instead of through downward adjustment by a price index. This statement assumes that the workers employed in mining the extra coal are thereby diverted from other work, lessening the amount of final product turned out elsewhere. If these workers would otherwise be unemployed, then, by hypothesis, the production of the extra coal will not prevent anything else from being produced; national income will be unchanged, as a measure of material welfare.

49. If similar difficulties arise in the households of consumers, however, instead of in business firms, there is no way in which the decline in material welfare is registered, under prevailing or suggested meth-

ods of national income accounting. The fuel purchased by the householder in the cold country is counted as a final product, a consumer commodity. "How nice it would be if we were never ill and never needed a haircut!"<sup>1</sup>

If the decline in material welfare, represented by the necessity of working in order to keep warm, or to keep well, is ever to be registered in the national income total, it seems likely that either of two devices will be utilized: a product-price index that takes account of free goods (Chapter 1, § 19), or a narrowing of the final goods concept to exclude mixed consumer goods (Chapter 6, § 11). But the latter adjustment would be effective only when there was also a necessity of keeping warm in order to work.

**50.** When the government, rather than private enterprise, experiences a need for more coal to heat its courthouses, no mechanism exists whereby this worsening of the economic situation is necessarily translated into higher product prices or lower factor payments. In terms of the six-man economy in § 4, B and B' each are hired half-time to dig the extra coal needed by the government, and are paid through a tax of \$16.66 on each of the six persons. If the before-tax rule as formulated in § 36 is followed, the national income is computed to be \$600, since there is no new "service to business" to subtract, and no change in the index of product prices. Product prices fail to rise despite the decrease in product turned out, since consumers' demand is decreased correspondingly by the new tax. The \$600 total fails to reflect the worsening in the economic situation. The after-tax rule, however, as stated in § 36, does reflect it, since there are no new "services to consumers" to add back; the national income is shown to have declined from \$600 to \$500. From the product side, the rule stated in § 36 also reflects the decline in welfare, since there are no new services to consumers to include, and the private product of B and B' has decreased by \$100.

The before-tax rule can be corrected to reflect the decrease in material welfare by stipulating that from factor payments as computed before deducting taxes there must be subtracted an amount equal to the government's service to business plus its general-purpose expenditures — all outlays, in short, except those on current services to consumers. (The problem of outlays on durable goods is discussed in §§ 54–56.)

<sup>1</sup> Richard Stone, "Two Studies on Income and Expenditure in the United States," *Economic Journal*, April, 1943, p. 75.

If the individuals are distributed by size of income, in the sense of economic benefits received, the only possible method is, as in § 27 above, to state the individual's income after all taxes, plus whatever consumer services he receives from government.

51. A three-way division of government output has not been advocated by national income analysts, in general,<sup>1</sup> but it was utilized in the official estimates in Germany in the nineteen-thirties: government expenditures serving consumption, those serving the productive sector, and those for "state purposes." Only the first was included in national income; it comprised outlays for education, health and welfare, housing, sewers, street-cleaning, parks, fire department, and street-lighting. Government expenditures for net capital formation were also included in national income,<sup>2</sup> but the exclusion of expenditures for state purposes — national defense, for example — seems to have reflected only a tentative decision, taken to obtain a figure for government product which would command agreement as being a minimum.<sup>3</sup>

The distinction drawn here between general-purpose expenditures of government and those on services to business or to consumers is not used by Kuznets, or the Department of Commerce, or in the British White Paper. Their rules of computation are as given in § 28, regardless of the amount of general-purpose expenditures. Consequently, even though the sea may grow wilder, the community less and less law-abiding, or the weather colder, the diversion of part of the country's labor and capital to meet these destructive forces would not cause any decrease in the national income under these computations. The national income may decrease under Kuznets' method, but only if the new current expenditures on maintaining sea walls, courts, and so on are financed otherwise than by personal taxes.

52. The third group of government outlays distinguished in the present analysis includes war and defense expenditure. However essential the war service may be if consumer goods are to be enjoyed, it is not here considered to be a consumer good itself. Coal mined to produce ammunition to repel the enemy is analogous to the coal mined to operate the pumps to keep out the sea water.

<sup>1</sup> But cf. Clark Warburton's suggestion in *Studies in Income and Wealth*, VI, 37, and the "political services" included in national income in the analysis by Gerhard Colm, "Public Revenue and Public Expenditure in National Income," *Studies in Income and Wealth*, I, 212-16.

<sup>2</sup> *Das Deutsche Volkseinkommen vor und nach dem Kriege* (Einzelschriften zur Statistik des Deutschen Reiches, no. 24), pp. 14-16, 56-60.

<sup>3</sup> *Ibid.*, p. 16. Cf. comment by Ernest Doblin, "Measuring German National Income in Wartime," *Studies in Income and Wealth*, VIII, 181-83.

Consequently, in wartime, use of the concept suggested here would produce a figure for national income unrecognizably small, in view of the practice that has been followed by national income estimators in the United States, Great Britain, and other countries. They do not deduct the amount spent for war, in computing national income. The total national income, as thus recorded, has therefore risen to unprecedented heights—in the United States, for example, from \$78 billion in 1940 to \$161 billion in 1944 (Commerce) in the unrevised series, which deducted corporate income and excess-profits taxes.

**53.** Perhaps the prevailing refusal to deduct war expenditures in computing the national income indicates that in wartime what the nation wants to know is not how well off it is but how much effort it is exerting.<sup>1</sup> Interest shifts to national cost (Chapter 1, § 9). For this purpose the rules developed up to this point would have to be modified. First, as explained in Chapter 1, a factor-price index, not a product-price index, would have to be used for inter-temporal and inter-regional comparisons. Consequently, the national income rules with respect to the government sector (§ 36) would have to be modified to the extent necessary to give correct results under the use of a factor-price index. When the government supplies a business service that lowers private selling prices, neither the before-tax nor the after-tax rule, as given for measuring national income, will hold in measuring national cost. Factor prices do not fall; therefore, no adjustment is indicated on this score. As a measure of cost, factor prices, if computed before taxes, must be totaled without subtraction for government services to business; if computed after taxes, government services must be added, whether to consumers or business. Similarly, if government service is for war or pumping out sea water, for example, factor reward must be counted without deducting any taxes or if all taxes are deducted, by adding the cost of all government services.

In wartime, the nation may also want to know what the total cost is in a broad sense, inclusive of the wearing-down of its plant and equipment. If this information is wanted, then factor rewards should be computed before deducting depreciation or depletion; also, inventory change might be put on a gross basis as between firms.

Some reason for including war outlays in the total of national income might be found in an analysis of the economic aspects of conquest, a problem not treated here.

<sup>1</sup> Cf. J. M. Clark, *The Costs of the World War to the American People*, p. 87.



## V. CAPITAL OUTLAY BY GOVERNMENT

54. The government's outlay financed by taxation may be of a capital nature; that is, the outlay made in one year does not yield its service to consumers, or to business, or to the economy generally until a later year.

Consider first an expenditure for a capital asset that, in being used up in later years, will render a service to consumers. In the year of outlay this expenditure may be capitalized on the government's books, just as it would be in the accounts of a private firm. Real income to the full amount of the expenditure is thereby considered to have been produced in that year.

In year 1 the government spends \$10,000 in wages to have a park created, and increases taxation by \$10,000 for that year alone. If national income is computed from the factor-payment side, the \$10,000 wages is, of course, included. If the after-tax method is followed, the anomalous result of an increase of zero in the national income will be obtained, unless there is added to income after taxes, not only the amount spent on current services to consumers, but also amounts spent in creating capital assets designed to yield consumer services in later years. The before-tax rule, of course, needs no such adjustment in order to register the \$10,000 of national income. Under the product approach, the capital asset must be included.

In each subsequent year there is an imputed item of government expense equal to an interest charge on the existing investment. The government could have obtained an actual interest income by investing the \$10,000 in a capital asset in the private sector of the economy, an office building, for example. This loss of explicit interest is a cost. Since government products are presumed to be worth what they cost (for lack of any more precise accounting), the existing investment is considered to yield imputed interest to cover this cost. And the imputed interest is considered as invested in the asset, increasing the total amount of investment. If the park's \$10,000 value is not decreased by use or unforeseen damage, and if interest is at 4 per cent, the government outlay on investment in year 2 includes a \$400 imputed interest charge, and government receipts include a \$400 imputed interest income from its property. The investment in the park is \$10,400 by the end of the year.

In year 3 the park is used up in consumption to the extent of \$1000. Under the product-approach the government investment item regis-

ters a negative amount,  $-\$1000$ ; this is offset by an equivalent entry under flow of goods to consumers. On the factor-payment side, the before-tax and after-tax rules are not, as such, applicable, since the government's expenditure is not financed by taxes. Moreover, there is no factor income involved. (The analogous case in private enterprise would be a business concern that sold a product to a consumer for just enough to cover depreciation charges, without experiencing any other expenses.) The before-tax rule nevertheless gives a correct result even in this case, since it ignores both the service to consumers and the government depreciation. If the after-tax rule is to be used, the government depreciation must be included as a negative item, since the service to consumers is counted.

An alternative method of computing is to disregard the capital nature of the expenditure and call it a service to consumers in the initial year of outlay. The national income is the same except that it is understated in later years by the absence of the imputed interest income.

**55.** The second case is the kind of capital asset that, in being used up, will render a service to business. For the year of outlay, the expenditure may be capitalized, and imputed interest added for subsequent years, just as in § 54. In a year when the project is rendering a service to business, the amount of the service is computed as the decrease by use in the value of the investment during the year. In computing national income from the product side, the depreciation enters the national income accounts as a negative item, a disinvestment, and this time there is no consumption item to offset it. But the per-unit cost of the products of private firms declines because of the free service from government. The firms may utilize the government service to turn out a larger number of units of product, at an unchanged total cost (including profits in cost). This means, of course, a lower selling price per unit. The use of a product-price index on the total of private product will inflate it to reflect this physical increment. If the decrement from depreciation of the government asset just equals this increment to private product, national income for this year is unaffected.

The firms may instead utilize the government service simply to decrease their expenses and increase their profit. The selling price of private product does not go down. The benefited firms discharge one or more of their factors of production; this is the way the firms decrease

their expenses. These factors are thus released to increase product elsewhere in the system; if they do not find opportunities available, national income falls.

From the factor-payment approach, the before-tax rule considers that the depreciation of the government asset is the amount of "service to business" that is to be subtracted under that rule. Alternatively, the depreciation could be regarded as a negative factor income to the government. Either method would give the offset required to the positive item produced by the effects of the government service in increasing the physical volume of private output. But for simplicity in statement of the rules, it is preferable to count the depreciation as a service to business.

As in § 54, the use of the after-tax rule requires that the wearing-out of the government asset be taken into account as a negative item. Otherwise there is no way, under this rule, by which the required offset can get into the accounts.

Again, the government outlay can be treated simply as a service to business in the year of initial outlay, though this is a less informative method, since the benefit to business does not in fact occur until later. The year of initial outlay shows a smaller national income under this method than if the expenditure is capitalized, for a service to business is not included as such in the national income, and the added output by business does not occur until a later year. Correspondingly, the national income of the later year is larger than under the capitalization method. No such difference in the two years develops when the capital outlay is to provide a consumer service (§ 54): there, the absence of imputed interest is the only difference. In general, the fact that the capital outlay is to provide a service to business makes it more important to decide which method of computation is preferable and to follow it consistently.

**56.** As to capital outlays for sea walls, battleships, and other services neither for consumers nor business, the decision whether or not to capitalize them affects the national income of the earlier versus that of the later years, and hence is an important one in making short-period inter-temporal comparisons. Shall the loss — if it is to be considered a loss — represented by having to divert resources to these ends be assigned entirely to the year of outlay or spread over the later years? The latter procedure follows the principle implied in capitalization in §§ 54 and 55; namely, that as long as the asset still exists in some

economic sense, it reflects an addition to national income. Then in the years of use the depreciation will be entered as a negative national income item, with no offsetting entry anywhere else in the system. But the capitalization principle was applied in §§ 54 and 55 because some benefit was to be registered, either to consumers or business, in a later year. In the present case, no benefit is registered in later years. It would seem preferable to write off the loss in the year of outlay, which would then show an increment of zero net national income instead of a positive increment; and the later year would show a zero increment instead of a negative one.

Under the factor-payment approach, the before-tax rule will deduct the depreciation item, or the initial outlay item, as being the amount of services other than to consumers. The after-tax rule will, as usual, call for a special negative item.<sup>1</sup>

## VI. TRANSFER PAYMENTS

**57.** Some outlays by the government yield it nothing in return that can be put to use as a current service to consumers, a current service to business, or a general overhead service of government, or that can be capitalized as a government investment. These outlays, which do not provide services, and therefore are called mere "transfer payments," are of two types: gifts, and cancellation of already existing money claims. The relief payments that the government makes to the indigent are gifts, not in any moral or even political sense, but merely in the economic sense that no productive activity is done for the government in return. When the government redeems one of its bonds, it pays out money and gets in exchange a cancellation of a money claim against it. Here again, the government outlay does not result in any one of the three types of service. Transfer payments are disregarded in computing national income (but, defined more narrowly to exclude

<sup>1</sup> For the extent to which current computations attempt to distinguish capital outlay by government, see Chapter 6, §§ 27, 29, and Chapter 11, Table 53.

Lack of agreement between the official national income analysts of Canada, Great Britain, and the United States on "the desirability and feasibility of dividing the government accounts between a capital account and a current account . . . is responsible for nearly all the . . . differences between the proposed methods of measuring national income and national product in the three countries. . . ." Edward F. Denison, "Report on Tripartite Discussions of National Income Measurement," *Studies in Income and Wealth*, X, p. I-4 (mimeograph). On imputation of interest, and depreciation, see *ibid.*, pp. I-9 — I-10.

"So far as the author knows Denmark is the only country where the Government actually prepares annual balance sheets of all Government-owned property." J. B. D. Derksen, *A System of National Book-keeping [in the Netherlands]*, p. 13.

debt redemption, they are included in "income payments to individuals" — see Chapter 10, § 3).

Even if additional tax revenue is raised in either case, the national income is not affected. If national income is computed as factor incomes before deducting taxes, minus government services other than to consumers, the total is unaffected by either the tax-relief or bond-redemption transaction, and the before-tax rule stands without modification. Under the product approach, no positive or negative item is entered.

But if national income is computed as factor incomes after tax, plus government services to consumers, a spurious decrease in national income will be recorded. Hence the after-tax rule must be modified to read: Take factor payments after deducting taxes, and add government services to consumers and government transfer payments. The rationale of this rule, for the treatment of bond redemption, is that the decrease in the income of the taxpayer is matched by a decrease in the liabilities of persons generally in this economy, a decrease equal to the bond cancellation. It is not possible to say just who is benefited — that is, whose liabilities are reduced. The very existence of the government debt was an indication that the allocation of the ultimate liability for some previous real expense met out of the proceeds of the loan had not yet been settled. It is now settled by the tax on the particular taxpayers involved, and no one can specify the persons who thereby escaped having more of the burden of the settlement fall on them.<sup>1</sup>

**58.** The government may levy taxation to purchase an already existing asset — a parcel of real estate or a case of canned goods, for instance — instead of employing labor or renting capital equipment. This kind of outlay does not give rise to national income directly (except as a profit is recorded on the sale). If real estate is purchased, the outlay is sometimes called a transfer expenditure.

To extend the term "transfer expenditure" to this case may cause some confusion. Two possibilities must be distinguished: the asset does or does not come out of inventory. If it does, the national income can be computed without error under the rules given through § 56; that is, without utilizing the transfer-payment modification.

Under the factor-payment rules, if income payments are taken after taxes, the purchase creates no income, and the tax creates a negative

<sup>1</sup> Cf. Robert Murray Haig, *Financing Total War*, pp. 10-16.

entry, which is canceled either (a) by an increase in the government's capital assets; (b) by an increase in government services to consumers; or (c) if the government uses up the asset in rendering a service to business, by a rise in profits or reflation by a product-price index. If the asset is used up in rendering a general-purpose service, the negative entry is, properly, not offset; there is a negative increment to national income.

If income payments are taken before deducting taxes, the government transaction does not change any of the items unless the asset is used up (a) in rendering a service to business, in which case the negative entry required by the before-tax rule is counterbalanced by the rise in profits or by the reflation index; or (b) in rendering a general-purpose service, in which case the negative entry is, properly, not counterbalanced.

Under the product rule, the negative investment item, a net decrement in inventory, is offset by a government-purchase item, unless the asset is used to render a service to business or a general-purpose service, in which cases the remarks immediately above apply.

If the asset does not come out of someone's inventory — but is still purchased by the levy of taxation — neither of the factor-payment rules needs modification, for they do not take account of inventory change. But the product approach, which adds or subtracts net change in inventory, will lack a negative item that it should have. The defect can be remedied by omitting an equal positive item, government purchases. But if the asset is used up by the government in rendering a service to business, it is not to be counted among government purchases in the product approach, under the rules suggested here (§ 36). The positive element appears instead in the larger profits, or in the increment added by reflation with a product-price index. The only remedy is to make a lump-sum adjustment. Consequently, to the extent that the government purchases assets not out of someone's inventory and uses them up in serving private business, a negative item of that amount must be entered as a general adjustment, in computing net income. In practice, it will probably not be feasible to ascertain the amount of adjustment thus needed; fortunately, it is probably small.

If the asset is used up in rendering a general-purpose service a similar negative adjustment is needed; otherwise the proper decrement to national income will not be registered.

## VII. SUBSIDIES

**59.** A government subsidy is ordinarily an amount paid to a business firm to induce it to offer its product for sale at a lower price than it otherwise would. The result is usually a larger physical volume of sales of that firm's product.

A subsidy can be considered a government service to business, rendered not in kind but in money. As such, it can be treated in national income statistics in the same manner as other services to business. For example: The government taxes individuals to obtain money to subsidize the production and sale of a product. The sale price of that product declines as a consequence, and more units are sold, resources being shifted to that field to lift production there. Total national income is unchanged. The national income computations produce an unchanged total, since reflation by a product-price index will offset the decrement in national income registered under the after-tax rule through subtraction of the new tax, or under the before-tax rule through the subtraction of services to business.

If the subsidy is paid to the consumer, it is a species of transfer payment and, as such, may be accounted for under the rules suggested in § 57.

Consequently, no specific reference to subsidies will be made hereafter in this volume. Subsidies will be understood to be included either in services to business or in transfer payments to individuals.

Both the Department of Commerce and the British White Paper include subsidies to private business in national income but not in national product (at market values) (§ 40). In the Commerce accounts, subsidies are entered as a negative item in computing surplus of government enterprises (§ 38), because subsidies paid through federal government enterprises have not been segregated from other expenditures of these enterprises.<sup>1</sup>

## VIII. GOVERNMENT BORROWING

**60.** If the government finances its outlay by borrowing, the national income for the year of outlay should be recorded at the same total as if taxation had been employed. For the economy as a whole, the difference in financing implies no change in material welfare. Under the product approach, no change is required in the rule as

<sup>1</sup> U.S. Department of Commerce, *National Income and Product Statistics for the United States, 1929-46*, p. 23 (mimeograph).

developed up to this point. Under the factor-payment approach, no change is required if the before-tax method is used. It is still necessary to subtract, from factor payments before taxes, an amount equal to business services rendered, in order to make the total consistent with the adjustment that will be made by an index of product prices.

But if the after-tax method of the factor-payment approach is used, the loans to the government must be deducted along with the taxes. Consider, for example, in the hypothetical economy above (§ 5), that the government (A and A'), producing a service for consumers, is financed half by taxation — \$25 each from B, B', C, and C' — and half by \$25 loans from each. If the after-tax method is employed, and all the consumer service is added to get the national income, the latter will be overstated by \$100.

In this particular illustration, the deduction of loans in computing net factor payments could be avoided by modifying the rule to read "... add that proportion of government services to consumers that is financed by taxes." But if part of the services (say, \$100) is to business, and part (say, \$200) is to consumers, and if a part (say, \$50) is borrowed and part (say, \$250) is obtained in tax, it is not possible to determine how much of the service to consumers is financed by taxes.<sup>1</sup> Consequently, if taxes are to be deducted from factor payments, and hence certain government outlays are to be added, it is necessary to deduct loans to government too, if the correct total of national income is to be reached.

Correspondingly, if the government redeems an obligation, the after-tax rule must add an amount equal to the redemption. If a government takes \$100 in taxes from A to redeem a bond held by B, no national income, either positive or negative, is thereby produced. If A's income is counted after taxes, the \$100 must be added back at some stage — presumably as a lump-sum adjustment at the end of the

<sup>1</sup> Suppose that A and A', as government, produce services to consumers, and B', as government, produces a service to the business firm B, whose sales receipts decline to \$100 as it halves its selling price because of this free service. The \$300 government outlay is financed \$250 by tax and \$50 by loan. The taxes are: \$25 on A, \$25 on A', and \$50 each on B, B', C, and C'. The loan is \$50 from C. The index of final-product prices, including the government final product of \$200, declines from 600 to 500. Under the before-tax rule, the national income equals the factor payments (\$600) minus the service to business (\$100), inflated by the price index 6/5, or \$600, as it should. Under the after-tax rule, factor payments after tax are \$350. Adding consumer services gives \$550, and inflating by the price index overstates the national income, which is \$600. What is needed is to add to \$350 just \$150 out of the \$200 service to consumers. But there is nothing in the tax-loan ratios that produces this required fraction of three fourths.



computations — to avoid understating the national income. If the suggestion in § 57 is followed, the adjustment will be made by treating the debt repayment as a “transfer payment.”

**61.** Although these modifications of the after-tax rule are unobjectionable for reaching a total, they give ambiguous results when individuals are distributed according to their income. Individual A has an income of \$3000, pays \$400 income tax, and lends \$300 to the government. His factor income after taxes and loans is \$2300, but it is difficult to find much significance in this figure considered by itself, except as a measure of the year's addition to the individual's power of buying or lending or accumulating cash aside from loans to government. Certainly it is no measure of that part of his factor payments that is freely disposable by him; only taxes should be deducted for that concept. Nor is it a measure of his material welfare; even if the consumer services he gets from government were added, the result would understate his share in the total product of the economy by the amount of the loan. Individual B has an income of \$3000, pays \$400 income tax, and lends \$5000 to the government. The principles involved are the same as for A, but the negative amount of income after taxes and after loans ( $-\$2400$ ) highlights the danger of misinterpreting this figure considered by itself. If the government borrows from a bank, the bank's “income after taxes and after loans” would be a huge negative amount in times of a rapidly expanding government debt.

#### IX. DIRECT CREATION OF NEW MONEY BY THE GOVERNMENT

**62.** The government may create its own money directly, as in printing currency, instead of having the money created for it by the sale of its bonds to the banking system (Chapter 8, § 11). The after-tax after-loan rule, literally interpreted, is then inadequate. The only possible procedure is a lump-sum adjustment by subtracting an amount equal to the newly created money. Similarly, if the government literally destroys money, as in the burning of old currency, the after-tax rule must include an addition of this amount.

#### X. CHANGE IN GOVERNMENT CASH BALANCES

**63.** Up to this point it has been implicitly assumed that, however the government obtained its money, it spent all of that money during the time period under consideration. The rules must be expanded to cover changes in the government's cash balances. The approach

from the product side is obviously not affected. On the factor-payment side the before-tax rule is not affected either. But the after-tax rule must be modified, since taxes may be imposed merely to build up the government's cash balance. Likewise the government may borrow or create new money merely to build up its balance. And it may draw on its balance to decrease taxation, redeem debt, or destroy money. The after-tax rule must include a positive adjustment for an increase in the government's cash balance and a negative adjustment for a decrease.

## XI. RECAPITULATION OF THE THREE RULES

**64.** The before-tax and after-tax rules under the factor-payment approach may now be stated as follows:

*Before-tax rule:* Take all factor payments before subtracting any taxes, and subtract an amount equal to (a) the value of the government's service to business plus (b) the value of the government's general-purpose services.

*After-tax rule:* Take all factor payments after subtracting all taxes; add an amount equal to (a) the value of the government's services to consumers plus (b) the government's outlays on capital assets on a net basis (that is, after subtracting depreciation on government assets) plus (c) government transfer payments; subtract an amount equal to (d) all loans to the government, whether by banks or others; (e) subtract or add the amount of money created or destroyed, respectively, to the order of the government; (f) subtract the decrease or add the increase in the government's cash balance.<sup>1</sup>

The term "factor payments" as used in these definitions includes imputed interest on government assets.

The two factor-approach rules and the product rule are summarized in the accompanying tabular résumé (pages 282-83).

## XII. GOVERNMENT INTEREST PAYMENTS

**65.** The interest paid on government debt raises some difficult issues both of definition and of measurement.

<sup>1</sup> The before-tax and after-tax rules, in their final form, including adjustment for loans to government, may be expressed symbolically as follows:  $I$  = income of factors before deducting any taxes;  $T$  = all taxes;  $C$  = government services to consumers, capital formation, and transfer payments;  $S$  = other government services;  $B$  = government borrowing;  $M$  = new money created directly by the government;  $L$  = increase in government's cash balance; and  $C + S = T + B + M - L$ . National income under the before-taxes rule is  $I - S$ . Under the after-taxes rule, it is  $I - T + C - B - M + L$ . The two expressions are identities. On p. 283, for simplification,  $B$  includes  $M$  and  $-L$ .

The amount of national income is not influenced by the form in which private business firms finance the acquisition of their durable assets. If a business concern constructs a building with a useful life of twenty years, depreciating one twentieth in value each year, the national income is the same, whether the concern borrows the money to construct the building, or uses its own money, or rents the building from another. The operating income available to investors is the same in either case. It appears in the national income either as interest, net rent, or profits.

Suppose bonds are issued to individuals. It does not matter whether the bonds are for ten, twenty, or thirty years. If they are ten-year rather than twenty-year bonds, the profit item of the last ten years of the life of the building is greater and the item, "interest received by individuals," is correspondingly less. If the bonds are for thirty years, the item, "interest received by individuals," is offset during the ten years following abandonment of the building by a corresponding entry of loss for the concern.

Similarly, in principle, the method of financing used by the government should not alter the total national income for any of the years if the underlying physical realities are the same under all the financing methods. This principle will not be realized in practice, however, if the actual interest payments of the government are counted in national income. Unlike private enterprise, government compiles no net profit statement, where any change in interest paid is accompanied by a countervailing change in profit. The only way to make the total of national income independent of the government methods of financing is to disregard actual interest paid. On the other hand, interest on the current, depreciated value of each durable asset of the government's must be imputed, no matter what methods of financing have been used in constructing it. "Durable" need not mean tangible. Just as a business firm may have a durable asset in a patent right or good will, so a government outlay on service alone may have an effect on the economic situation of later years.

**66.** By obtaining imputed income through ownership of a durable asset, the government dispenses with certain money flows. It does not need to raise taxes and it pays nothing to private enterprise or individuals for goods or services. These payments are implicit, and must be entered, if the rules for computing national income, rules that are based on money flows, are to be applicable. The imputed

| Factor-Approach Rules   |  |  | Product-Approach Rule  |
|---|--|--|--|
|   | Before-Tax Rule  | After-Tax Rule   |  |
| Government services to consumers                              | (1) Sum of factor payments before deducting taxes                              | (1) Sum of factor payments after deducting taxes<br>(2) Add value government services to consumers | Add<br>(1) Sum of consumer purchases<br>(2) Net increase in private inventory and other business assets<br>(3) Net increase in claims on non-residents<br>(4) Value government services to consumers |
| Government services to private business                       | (1) Remains unchanged<br>(2) Deduct value of government services to business   | Remains unchanged  | Remains unchanged  |
| Government general purpose services                           | (1, 2) Remains unchanged<br>(3) Deduct government general purpose expenditures | Remains unchanged  | Remains unchanged  |
| Government capital outlay for asset yielding consumer service | Remains unchanged  | (1, 2) Remains unchanged<br>(3) Add value government capital asset                                 | (1, 2, 3, 4) Remains unchanged<br>(5) Add value government capital asset   |
| Depreciating government asset yielding consumer service       | Remains unchanged  | (1, 2) Remains unchanged<br>(3') Deduct depreciation as government negative factor income          | (1, 2, 3, 4) Remains unchanged<br>(5') Deduct depreciation as negative government investment<br>(4') Add value government services to consumers equivalent amount                                    |

|  |  |   |  |
|--|--|---|--|
| Depreciating government asset yielding service to business | (1, 3) Remain unchanged<br>(2) Same but includes depreciation as service to business                     | (1, 2, 3') Remain unchanged   | (1, 2, 3, 4, 5') Remain unchanged<br>(4') No entry |
| Depreciating government general purpose asset              | (1, 2) Remain unchanged<br>(3) Same but includes depreciation as service other than to consumers         | Remains unchanged   | Remains unchanged                                  |
| Transfer payments by government                            | Remains unchanged  | (1, 2, 3, 3') Remain unchanged<br>(4) Add government transfer payments  | Remains unchanged                                  |
| Government outlay financed by borrowing                    | Remains unchanged  | (1, 2, 3, 3', 4) Remain unchanged<br>(5) Deduct loans to government   | Remains unchanged                                  |
| Rule in final form   | I (1) Sum of factor payments before taxes  | I-T (1) Sum of factor payments after taxes  |  |
| (C + S = T + B)  | Deduct<br>S { (2) Value government services to business<br>(3) Value government general purpose services | Add<br>C { (2) Value government services to consumers<br>(3) Government capital outlay on net basis<br>(4) Government transfer payments | Remains unchanged                                  |
|  | =  | Subtract<br>B { (5) All loans to government<br>(6) Net money created<br>(7) Net loss government cash balance                            |  |
|  |  |   |  |
| National Income = Y  | Y = I - S  | Y = I - T - B + C   |  |

interest on government property may therefore be imputed to the individuals in the economy as a collective group, and they may be considered to pay this income back to the government as imputed taxes, in return for the service rendered by the government-owned assets, so far as this service is measured by the amount of imputed interest.

The after-tax rule must take into account the interest income imputed to individuals, and their imputed tax payment. The before-tax rule needs to take account only of the first item. Under the product approach no imputed payment is recorded, but the service itself is entered.

**67.** Should interest on a war debt be included in national income? Under the view taken in § 65, no interest can be counted unless there is an asset in existence, tangible or intangible. If war expenditures are considered to create assets, an imputed interest may be calculated.<sup>1</sup> But in any case the actual payment of interest is to be disregarded. Interest as a payment for time preference or liquidity preference is not included in national income (Chapter 1, § 20; Chapter 5, § 24).

**68.** The British White Paper includes in national income the interest on local debt but not on central government debt, because most of the latter is war debt and hence does not reflect currently existing assets.<sup>2</sup> This procedure is in principle an approximation to imputing interest on government buildings and other assets (§ 65).

The Commerce Department has recently moved to the British point of view and even gone beyond it. In its forthcoming revised series on national income, the Commerce Department will exclude interest on all government debt, federal, state, and local, on the ground that the interest payments do not reflect currently produced goods or services.<sup>3</sup> In its national income series published up to the present time, all government interest paid to individuals is included. This procedure has been supported by the argument that the creditor is rendering a current service in giving the government the use of his money.<sup>4</sup> Cer-

<sup>1</sup> For some possible treatments of war output as capital formation, see Simon Kuznets, *National Product in Wartime*, part I.

<sup>2</sup> Cmd. 6623, pp. 6-7 (1945).

<sup>3</sup> Edward F. Denison, "A Report on Tripartite Discussions of National Income Measurement," *Studies in Income and Wealth*, X, p. I-8 (mimeograph).

<sup>4</sup> Milton Gilbert, "U.S. National Income Statistics," *Economic Journal*, April, 1943, pp. 81-82. Cf. the reasoning by J. R. Hicks and U. K. Hicks, supporting exclusion of the bond interest, that "the services for which [the war debt interest and war pensions] . . . are a deferred payment . . . went to produce past output. . . ." "Public Finance and the National Income," *Review of Economic Studies*, February, 1939, p. 151.

tainly an interest payment cannot be put in the same class as a relief payment. It is not a transfer payment in the sense of being a gift. The question remains, however, whether it is not a mere payment made because of the government's time preference or its desire for liquidity, or its unwillingness to settle currently how the burden should be distributed (§ 57), not because the payment of interest accompanies a reallocation of resources that increases total output of goods and services. If the cause of the payment is not the last one just mentioned, exclusion of the interest is justified unless the concept of production is broadened (Chapter 1, § 20).

Kuznets does not have to answer the question posed here, for he treats the government as a business enterprise, earning a profit or making a loss, and therefore the recording of the interest payment does not overstate the national income. The interest is included in the incomes of the individuals who receive it, and is subtracted in computing the government's profit or loss (saving or dissaving).

### XIII. LOSS OF BENEFIT VERSUS SHIFTING OF TAX

69. The economic struggle to pass on a tax to someone else is paralleled by an economic struggle to retain the benefits of a free government service. If the amount that each individual pays in tax is about equal to the value of the government service received, there may be little or no contest. But if the service and the tax are distributed in different proportions, the issue becomes evident. Suppose that a uniform tax is imposed on B, B', C, and C' to finance services to consumers, as in § 7, but that the services are divided between the consumers B and C, none going to B' and C'. Then B and C may find it difficult to avoid losing some of the benefits. They are in a particularly favorable position, each receiving \$50 of money income after tax and \$100 of government service, or \$150 altogether, compared with \$100 before the tax was imposed and the service rendered. They may lose part of the benefit by being forced to pay higher wages to B' and C'. If B' and C' were paid \$150 wages each instead of \$100, and still paid \$50 tax each, the relative situations as they existed before the tax would be attained. B' and C' would be getting \$100 each (money income after tax, no government services), and so would B and C (zero money income after tax of \$50, plus \$100 in government services).

The matter of terminology is somewhat troublesome here. If B and C do have to pay more to private sectors of the economy, as an offset

to their disproportionate sharing in government services, it would not be felicitous to label this action a "shifting" of the government-expenditure benefit to B' and C', for "shifting," in public finance, has always implied the passing on of a burden, not the slipping away of a benefit. Some new term is needed. Perhaps the simplest is the best: the recipient of the government benefit loses it, indirectly, through being forced to accept lower factor prices or pay higher product prices. "Losing the benefit" is then an action parallel to, but moving in the opposite direction from, "shifting the tax." An alternative terminology might use "government expenditure" as a synonym for "benefit" (without necessarily implying any benefit for society as a whole); the individual might then be regarded as "losing the government expenditure," or, for short, "losing the expenditure."

**70.** In some cases an economic effect of a public finance measure may be described either as a shifting of a tax or as a loss of benefit because the one may be indistinguishable from the other. The immediately preceding illustration is a case in point. Before the tax and service are introduced, B, C, B', and C' each receive and spend \$100. Under the tax and service, but before any change in factor prices or product prices has occurred, B and C each receive \$100 in money income (profits), pay \$50 tax, and receive \$100 in government services; and B' and C' each receive \$100 in money income (wages), pay \$50 tax, and receive no government services. Thereupon, B' and C' obtain an increase of \$50 in money wages (their tax does not increase), regaining their pre-tax, pre-service economic status. This \$50 change in the factor price, wages, may, so far as appearances go, be described either as a shifting, by B' and C', of their \$50 tax payments, or as a loss, by B and C, of \$50 of their government service.

In other cases, however, the shifting of a tax may be clearly distinguishable from the loss of a benefit. A tax may be levied on one segment of the economy, which shifts it to another, to finance a service rendered to still a third segment, which has no close economic connections with the first two segments, but which is forced to yield the benefit to a more powerful fourth segment. Two sets of changes in factor prices or product prices would be recorded.

For example, A and A' work half-time for the government producing a consumer service for C, financed by a tax of \$100 on B'. The wages of B' are raised \$50 and those of C' are raised \$50 as a partial return toward the former relative economic positions within each



industry. The increase in the wages of  $B'$  is clearly a shifting of tax by  $B'$ , not a loss of benefit by  $B$ , for he is receiving none. And the increase in the wages of  $C'$  is clearly a loss of benefit by  $C$ , not a shifting of tax by  $C'$ .

71. There is nothing in the loss of a benefit that requires a change in the after-tax or before-tax rules for consistent computation of national income totals from one period to another (or one nation to another).

72. In contrast to the shifting of taxation, the loss of benefit has not been studied to any appreciable extent either in economic theory or in the literature of public finance. The most obvious reason for this difference is that, while it is always clear who pay and who do not pay a particular tax in the first instance, and just how much each person pays, it is usually difficult to divide the community into those who do and those who do not "benefit in the first instance" (the meaning of that phrase is vague in this case), and it is usually impossible to ascertain by how many dollars any one person benefits. The "benefit received" figures assumed in §§ 69 and 70 imply a degree of knowledge that is usually not in fact possessed.<sup>1</sup>

#### XIV. CHANGES IN EFFICIENCY OF GOVERNMENT FACTORS

73. Government employees may work less intensely or less efficiently in one period or country than in another. But if, as is necessarily the case for the most part, they are paid on a time-wage, not a piece-rate, basis, the difference in output per worker will not be reflected in the national income totals. Working the same length of time, the employees are credited with producing the same amount of income (at a given wage rate). In a private concern the drop in output per worker would be reflected in a higher cost per unit of product. This higher unit cost would reduce the national income total either through reducing profits or, if the cost were passed on to the consumer, through the deflation required by the higher price index. Since government output usually has no sale price, changes in output per employee cannot be reflected either in "profits" under Kuznets' concept (Chapter 5, § 57) or in a price index.

<sup>1</sup> For a detailed analysis of the distribution of government benefits in Great Britain in 1937, see Tibor Barna, *Redistribution of Incomes through Public Finance in 1937*, chap. XVI, where the public expenditure on goods and services is classified under "divisible benefits" and "indivisible benefits."

So far, no measures have been devised to make even a rough allowance for time or regional differences in output per government employee, and a substantial degree of ambiguity is thus present in all comparisons of national income totals.<sup>1</sup>

<sup>1</sup> There is an extensive literature on the treatment of the government sector in national income analysis. For citations and summaries, as well as an independent analysis, see Gottfried Haberler and Everett E. Hagen, "Taxes, Government Expenditures, and National Income," *Studies in Income and Wealth*, VIII, 3-31. In most respects the analysis in the present chapter agrees closely with that of Haberler and Hagen. For recent discussions in the United States other than those cited elsewhere in this chapter, see the following papers in *Studies in Income and Wealth*: Clark Warburton, "IV: Treatment of Government Revenues and Services in the Measurement of National Income," pp. 83-92 in his "Accounting Methodology in the Measurement of National Income," vol. I; Gottfried Haberler, "The Treatment of Government Services," pp. 142-47 in his "National Income, Saving and Investment," vol. II; John Lindeman, "Income Measurement as Affected by Government Operations," and discussion by Clark Warburton and Morris A. Copeland, vol. VI. See also Tibor Barna, *Redistribution of Incomes through Public Finance in 1937*, pp. 15-25, and chap. II. The problems raised by war expenditures are analyzed by John Maurice Clark in *The Costs of the World War to the American People*, especially Chapter VI.

# 8

## *Saving and Investment*

1. Saving may be done by all of the three groups in the economy: individuals, business firms, and government. Investment, also, may be accomplished by all three. The present chapter examines the relative amounts of saving by each group, and the implications of the fact that total saving, by definition, equals total investment. The modifications in the analysis made necessary by the government's accounts are described. Finally, individuals' saving is studied in the light of the distribution of families according to size of income.

### I. EQUALITY OF SAVING AND INVESTMENT

2. In each of the transactions in the hypothetical economy of Chapter 2, neither party usually invests the same amount that he saves. For the two parties together, however, the amount of saving on any one transaction always equals the amount invested. The equation,  $\text{saving} = \text{investment}$ , is an identity, not a conditional equation; it follows from the definitions adopted. For the private economy alone, investment is defined as net output minus consumption. Net output is the same as net income, and "consumption," in this terminology, is expenditure on consumption. Saving is defined as net income minus expenditure for consumption. Thus, saving and investment are defined alike and obviously must be identical in amount.

Likewise, of the three groups, individuals, business firms, and government, no one group saves the same amount it invests except by extraordinary coincidence. But the three together necessarily save the same amount they invest.

3. The persons that make the plans for investment, generally businessmen, are not entirely the same group that make the plans for saving, largely consumers. The total amount planned for investment for a prospective period of time, say a year, cannot therefore equal the total amount planned for saving in the same period of time except by a highly unlikely coincidence. Indeed, many firms and consumers are planning only for a few months or weeks ahead, or not really planning at all.

Aside from changing the physical volume of production, there are two ways in which planned (ex-ante) saving and investment may be reshaped so that actual (ex-post) saving and investment are equal.

A consumer who is to receive a certain income during the year has been planning to spend it all. At some time within the year he changes his plans and decides to save \$100. He engages in no investment at all, in the national income sense; he keeps his saved money in currency or in the bank or exchanges it for other money assets. Compared with the situation that would have developed under his original plans, there is \$100 more of saving by him. Consequently, there must be \$100 more of investment or \$100 less of saving by someone else. Only so can the equality of total net saving and total net investment be maintained, if the physical volume of production is not changed. By spending \$100 less, the consumer causes a decrease of \$100 in the sales of business firms. The decline in dollar sales can occur in one of two ways: by a decline in the physical volume of sales, the price per unit remaining unchanged; or by a decline in the price, the physical volume remaining unchanged. There can, of course, be a combination of the two ways.

If the decline in sales takes place wholly through a lowering of the price, the physical volume of sales remaining unaltered, the firm will end the year with the same inventory as if the consumer had not decided to save \$100. But its dollar sales will be \$100 less, and it will consequently show \$100 less of profit (or \$100 more of loss). Since its income is \$100 less, its saving, or the saving of its proprietors, is \$100 less. This decline in saving offsets the increase of \$100 in the consumer's saving. Total saving and net investment each remain unchanged.

If the decline in sales is wholly in physical volume, price remaining unchanged, the business firm will end the year with an inventory of finished goods having a book value of \$100 more than if the con-

sumer had not changed his plans. Hence the business concern will show \$100 more of investment (or \$100 less of disinvestment) for the year. The consumer has forced the business firm to invest in \$100 of inventory. Total saving and investment have each increased \$100. Consumption expenditure has dropped \$100.

This latter illustration oversimplifies the analysis by assuming that the inventory is sold at its book value. If a customary margin of profit of, say, 25 per cent is obtained, the decline in spending by \$100 causes an increase of \$80 in inventory (investment) and a decrease of \$20 in the firm's profits and hence its saving.

Employment, under the assumption of no change in the physical volume of production, has not been decreased at all this year; but next year the business firm, in view of its unexpected inventory carry-over, may plan to employ fewer workers or work shorter hours.

## II. CHANGES IN DEFINITION OF SAVING NECESSITATED BY GOVERNMENT SECTOR

4. Two redefinitions of saving are required by the presence of the government. First, the saving of an individual or corporation is defined as income minus, not merely consumption expenditures or dividends paid, but also taxes paid. Second, a concept of government saving is introduced: tax revenues minus current expenditures (expenditures that are not for investment). The validity of these definitions may be shown by considering the simplest possible single transactions in which the government may be involved.

(1) The government collects tax revenue and adds to its cash balance. The taxpayer does not decrease his expenditures. Then the decrease in the taxpayer's saving is matched precisely by the increase in the government's saving. Since the transaction involves no change in investment, total investment in the economy still equals total saving. There is no increase in the national income in this example.

(2) The government draws on its cash balance to hire a worker from the unemployed. The worker's product is a service to consumers. The worker saves his income. The government dissaves an equal amount. Investment is not affected. National income increases by the amount paid to the worker (see the two factor-payment rules in Chapter 7, § 64) and takes the form of an increase in consumption of the government services.

(3) The government service is rendered to business, thereby en-

abling it to turn out more product at the same price. The results are the same as in the immediately preceding case, except that it cannot be said whether the addition to income takes the product form of consumer goods and services or investment goods until the nature of the product made by the private business firm is specified.

(4) The worker in case (2) is engaged in a general-purpose activity — the sea wall, for instance. Dissaving and saving are the same as in case (2). But if the reasoning suggested in Chapter 7, §§ 46–50, is adopted, there is no addition to the national income.

(5) The worker creates an investment object, like a park, for the government. The government does no dissaving, since it now makes no current expenditure. The saving of the worker is matched by the investment of the government.

If the new government employee is assumed to come from those already employed in private enterprise rather than from the unemployed, the possible changes in saving and investment become more complex, but the equality of total saving and total investment is still preserved.

**5.** The definitions of saving stated above are those used by Kuznets and the British White Paper. The definition of the saving of an individual or corporation is also the one used by the Commerce Department; and the definition of saving by government presumably would have been used by the Commerce Department if it had computed an item of government saving.

This definition of government saving, unlike that for individual or corporate saving, is not in terms of the saver's income. Whether the excess of tax revenues over current investment should also be considered an item of income (government "profit") is a separate issue, one on which Kuznets and the White Paper, for instance, differ.

The Commerce Department is the only one of the three that has not computed a continuing item showing total saving, including government saving or dissaving (government surplus or deficit on current account). Hence it has not shown a continuing series of total investment equal to total saving. But Table 30 (in Chapter 6), presents data on approximate private net capital formation and gross public construction, which together give a very rough impression of the volume of total saving. Moreover, in its revised series, Commerce shows the government "deficit or surplus on income and product transactions" as one of the entries in its "Balance of Gross Saving and Investment" account (§ 12 below, and Chapter 3, § 12).

Kuznets estimates the amount of profits of unincorporated firms that is retained in the enterprises ("entrepreneurial savings"), the remainder being "entrepreneurial withdrawals." These estimates are subject to a considerable margin of error.<sup>1</sup> In the Commerce Department series these undistributed profits of partnerships and sole proprietorships are a part of "net savings of individuals."

Kuznets subtracts, from net capital formation as estimated under the product approach, direct estimates of saving by corporations, government, and unincorporated concerns, and the remainder is the saving by individuals, or, as he expresses it, "savings by individuals that became embodied in capital formation."<sup>2</sup> Consequently, saving equals investment in Kuznets' series, as in the others. Kuznets notes several reasons why individuals may commonly consider their saving to be different from that obtained under the national income computations.<sup>3</sup>

The staff of the Securities and Exchange Commission, in estimating the volume of saving in the United States, also adopts definitions of saving and investment whereby the two amounts are always equal.<sup>4</sup>

The British White Paper, although not referring specifically to the Keynesian definitions of saving and investment and the implications of the equality of the two quantities, clearly utilizes them in its discussion of those two magnitudes.

6. The amount of saving and investment recorded by the government depends on whether account is taken of depreciation of government assets, and imputed interest on those assets.

Depreciation is disinvestment. It is also an imputed expenditure. This imputed expenditure, like a money expenditure, is either for

<sup>1</sup> Kuznets, *National Income and Its Composition*, II, 405, 447, 449, and part IV, National Bureau of Economic Research.

<sup>2</sup> *Ibid.*, I, 276, Table 39.

<sup>3</sup> *Ibid.*, I, 277-78. Kuznets nowhere refers to the Keynesian definitions of saving and investment and the implications of the equality of the two amounts. Cf. also his definition of national income as "expenditures and savings of consumers plus outlays of enterprises financed from their undistributed profits" (*National Income: A Summary of Findings*, p. 1). Taken literally, this seems to exclude corporate saving in so far as it is represented by an increase in the corporation's money holdings. However, neither this definition nor the views on saving attributed to individuals are intended to imply any inequality of total saving and total investment as defined by Kuznets' tabulations, assuming, of course, that both the saving and investment totals are computed on the same price level (letter to the present writer).

<sup>4</sup> R. W. Goldsmith and Walter Salant, "The Volume and Components of Saving in the United States, 1933-1937," *Studies in Income and Wealth*, III, 219. See also the discussion by M. A. Copeland, *ibid.*, pp. 295-300, and Walter Salant, *ibid.*, pp. 305-311.

investment in some other asset (as where the government wears down its own cement plant in building its own highways), or for supplying a service to consumers (as where pleasure vehicles wear down the highway), or to business firms (as where trucks wear down the highway), or for a general-purpose activity (as where a sea wall is worn down by the waves). As an imputed expenditure, depreciation creates dissaving, with one exception, and thereby decreases the government's saving and investment by equal amounts. The only exception occurs when the depreciation produces a rise in the value of another government asset, and therefore causes no net disinvestment. In this case there is no net dissaving either; the imputed expenditure (the depreciation) is not a current expenditure.

Kuznets' series is the only one of the three that takes account of depreciation of the government's assets.

If imputed interest on the government's assets is taken into account, the definition of government saving (§ 4) must be refined by adding "imputed interest" to "tax revenues." And "expenditures," current or capital, must be understood to include an imputed element equal to the imputed interest. None of the three series — Kuznets', Commerce, and British White Paper — includes imputed interest.

7. Although a failure to take account of depreciation or imputed interest on government assets in no way upsets the equality of total saving and total investment, it does affect the total of these items, as already indicated. It also affects the total of national income. For example: Taxpayer T starts the year with \$1000 in cash, receives no income during the year, and spends nothing. The government takes \$400 in tax from him and with it hires employee E to build an asset that renders no service to anyone during the current year, but will render a service to consumers to the extent of \$40 a year for the next ten years. An improvement in a city park might be an example. During the current year, income is \$400 (employee E), saving by employee E is \$400, dissaving by taxpayer T is \$400, and saving by the government is \$400. Investment is \$400. So far, depreciation and imputed interest have not entered the problem.

In subsequent years, as the park improvement is used up by consumers, the government's accounts fail to record the depreciation. It might be thought that this omission would lead to an overstatement of the national income. But the government also records no receipts from consumers for the use of the park improvement, since it gets



none. Consequently, the failure to record depreciation does not give rise to a false profit or interest item. A private business operating the park would show a \$40 decrease in the asset for each year, matched by a \$40 increase in cash, if consumers paid just enough to cover depreciation, hence zero profit. The government's accounts reach the same result by omitting both items.

Normally, however, the private business would anticipate receiving more than just enough to cover depreciation; it would expect to cover interest on the investment and would hope to receive a reward for risk. Thus, it might receive \$50 from consumers each year, leaving \$10 operating profit to cover interest and risk. The government's accounts, on the other hand, usually have no place where the \$10 for interest and reward for risk could appear. A partial exception occurs only to the extent that the government has borrowed money to finance the improvement and pays an interest charge. In any case no item of profit can appear, since the service is rendered free of direct charge. Assuming that the consumers of the park improvement like it so well that they would be willing to pay a price that would yield a profit if the service were rendered by private enterprise, there is at least a formal argument for considering the national income understated by the government's methods of bookkeeping.

There is a corresponding possibility that the national income may be overstated because the government's accounting for the park does not allow the recording of a loss. As an extreme case, suppose that no one at all ever makes use of the park improvement. Under private enterprise, each year's accounts would show: receipts, zero; expenses, \$40 (depreciation); net loss, \$40; dissaving and disinvestment, \$40 each. Under government, the accounts show nothing at all.

It would no doubt be scarcely appropriate to apply the same test of usefulness to a government service as to a service rendered by private enterprise. Much of the government product is distributed free of charge just because the consumers would not purchase it in so large an amount, if at all, on a cost-plus-profit basis from private enterprise. Some of it is given to consumers whether they want it or not (elementary education, for instance). But now and then clear instances of uselessness appear, where everyone would agree that the apparent national income recorded in the wages of the workers who constructed the asset, the interest on any money borrowed to finance

it, and so on, should be canceled in whole or in part by an entry for obsolescence.

8. The government may indeed be considered a form of business enterprise if its tax revenue is regarded as sales receipts and its current outlays as expenses.

Taxpayer T starts the year with \$1000 in cash, receives no income, and spends nothing. The government takes \$400 in taxes from him and hires employee E for \$300 to perform a current service for consumers. The remaining \$100 it adds to its cash balance.

If the government is not considered a business enterprise, national income is \$300.<sup>1</sup> Dissaving by the taxpayer is \$400. Saving by the government employee is \$300, and by the government, \$100. Consumption expenditure (government expenditure) is \$300. Net saving is zero and so is net investment.

But if the government is considered a business enterprise, the tax revenue is thought of as a reward that measures the value of the goods and services it dispenses. The excess of its tax revenue over its non-investment outlays is considered a profit, payable to the government as a factor of production. The national income will then be \$400 instead of \$300. The total government outlay becomes \$400, since the value of the service rendered is the sum of the factor rewards paid for it, and these rewards now include \$100 "profit." The profit has to be considered as accruing to no person in particular, but to the people generally as "owners" of the government. On the other hand, if current revenues fall short of current expenditures, a loss is recorded, offsetting in part the wages and other factor payments made by the government (Chapter 5, § 57).

Kuznets is the exponent of this point of view; the Commerce Department and the British White Paper do not accept it.<sup>2</sup> They argue that, regardless of the considerations adduced in § 7, and admitting the possible understatement of national income through the absence of a profit element in government accounts, an excess of tax revenue over non-investment expenditures is hardly the measure of whatever profit there may be. And they are unwilling to grant that current expenditures are a dead loss economically to the extent they are not covered by taxes. Kuznets argues that there is some connection, how-

<sup>1</sup> Computed by the after-taxes rule, it is:  $-\$400$  (T)  $+\$300$  (E)  $+\$300$  (service to consumers)  $+\$100$  (increase in government cash balance). See Chapter 7, § 64.

<sup>2</sup> Richard Stone, "Two Studies on Income and Expenditure in the United States," *Economic Journal*, April, 1943, pp. 62 ff.

ever uncertain, between what taxpayers in a democracy are willing to pay in taxes and the value they place on services the government renders. But in so far as this latter statement is valid, it seems to be so chiefly as a prediction that by and large and over the long run tax revenues will equal non-investment expenditures. If there is a gap, it can be attributed to a valuation by consumers higher or lower than the expenditure only if it is opened by the consumers taking action to change their contributions (their taxes) because their scale of values has changed. This is what occurs in the private sector of the economy. In fact, however, the government's "prices" (that is, tax rates) tend to be fairly stable over a period of time. The short-term gaps between tax revenues and expenditures arise because of changes in government expenditure and because of fluctuations in the money amounts of income, sales, or property bases to which the tax rates apply.<sup>1</sup>

9. The government's saving, as defined in § 4, may appear by the end of the period in the usual non-investment changes. One is an increase in the government's cash balance. The other is a decrease in the amount of its outstanding obligations. With rare exceptions (for example, the payment of federal estate tax in federal bonds), the saving first appears, before the end of the accounting period, as an increase in the government's cash balance; that is, as an increase in its deposits in the banks. The government may then use this increase in its deposits to pay off some of its debt. If it redeems bonds held by a bank, there is a decrease in the bank's assets as it surrenders the bonds. The government's deposit is extinguished or passes into the inactive category of deposits in one bank held by another bank. If the government redeems bonds held by non-bank creditors, there is no such destruction of deposits. The holder of the government bond surrenders it in exchange for a bank deposit (or coin or currency) previously held by the government. But in either case the transactions that follow the initial accumulation of cash by the government do not affect the computations of national income, saving, investment, or consumption expenditures.

<sup>1</sup> For a debate over the inclusion of revenue surpluses in the national income as "profits" of the government, and revenue deficits as government "losses" see G. C. Means, "Problems in Estimating National Income Arising from Production by Government," with discussion by Simon Kuznets and rejoinder by Means. *Studies in Income and Wealth*, II, 267-313.

### III. PRIVATE SAVING EQUALS INVESTMENT PLUS GOVERNMENT DEFICIT

10. The analysis in §§ 2-9 has shown how total saving equals total investment; that is,

$$\left. \begin{array}{l} \text{Saving by individuals} \\ + \text{Saving by corporations} \\ + \text{"Saving" by government} \end{array} \right\} = \text{Investment}$$

This identical equation must also hold if any of these values are negative, as in dissaving and disinvestment. For example:

$$\left. \begin{array}{l} \text{Saving by individuals} \\ + \text{Saving by corporations} \\ - \text{Amount dissaved by government} \end{array} \right\} = \text{Investment}$$

A dissaving by the government is a negative item, obtained by subtracting the current (non-capitalized) outlay from a smaller current revenue. This excess of current expenditures over current income also signifies a loss, a negative income, if the government is treated as a business enterprise, as in Kuznets' analysis. It represents no loss if the government is treated as a consumer, as in the analyses of the Commerce Department and the British White Paper. But this issue is not relevant for the present point, which is the equivalence of saving and investment. Whether or not the government's dissaving reflects a loss, the analysis in the present section is valid.

The excess of the government's current expenditure over current revenue would be called the budget deficit if the investment outlays of government were stated separately; it is here called "government deficit on current account." A negative government-saving item is thus the same as an entry for government deficit on current account. "Saving by government," when it is negative, is conveniently moved over to the right-hand side of the equation and labeled, as a positive item, a government deficit. This is done by adding that absolute amount to both sides of the equation. The form of the identical equation is changed:

$$\left. \begin{array}{l} \text{Saving by individuals} \\ + \text{Saving by corporations} \end{array} \right\} = \left\{ \begin{array}{l} \text{Investment} \\ + \text{Government deficit on current account} \end{array} \right.$$

The "saving" total may include additions to depreciation funds if investment is defined to include replacement investment. The equation will still hold, since an equal amount will be added to saving and to investment, putting both on a gross basis.

This equation is basic to much of the discussion of fiscal policy in

relation to unemployment, to inflation, and to other problems. The equation says that private saving always equals investment plus government deficit on current account. It also says that the excess of private saving over investment is always enough to match the government deficit on current account. These are simply statements deriving from the definitions of saving and investment. They may be useful, however, in provoking the student of national income to a more detailed understanding of how the several money-holdings, money flows, and asset-holdings must change in any given case to retain a self-consistent system.

Sometimes the terminology in national income studies reaches a degree of compression that creates an air of paradox, from which the reader may easily draw erroneous inferences. For example, it may be said that, since there is always enough private saving (and no more than enough) to match the government's deficit on current account after matching all investment, the "source of funds" for this deficit is the private saving. This is said to be true even when some of the government's borrowing is in fact from the banking system, so that it is borrowing newly created money, not money saved from someone's income. Thus, the British White Paper is said to have demonstrated that "the whole of the government's [wartime] spending was . . . financed from genuine sources. . . ." <sup>1</sup> The statement that the "source" of funds for the deficit — "ultimate source" is the phrase used in the British White Paper on national income <sup>2</sup> — is the saved money is true, but only in a very special sense. Because individuals and business firms hold the newly created money idle for a given interval, thus performing an act of saving, it is possible for the government to use the bank-borrowing method of financing without causing a rise in the general level of prices during that interval, or without causing a more rapid rise than does occur. The terminology of the White Paper is just as applicable in one period as in another. Even during a period of hyperinflation, the "ultimate sources" of funds for the deficit would be private saving.<sup>3</sup>

The saving-investment equation may be expanded to include tax revenue and government expenditure, since the government deficit

<sup>1</sup> D. G. Champernowne, "The National Income and Expenditure of the United Kingdom, 1938-1945," *Bulletin of the Oxford University Institute of Statistics*, May, 1946, p. 130.

<sup>2</sup> Cmd. 6784, p. 20.

<sup>3</sup> See the hypothetical illustrations by Milton Friedman in Carl Shoup, Milton Friedman, and Ruth Mack, *Taxing to Prevent Inflation*, pp. 6-14.

may be defined as expenditure minus tax revenue (and other current receipts). Consequently,

$$\begin{aligned}\text{Private saving} &= \text{Investment} \\ &+ \text{Government expenditure} \\ &- \text{Tax revenue}\end{aligned}$$

or, alternatively,<sup>1</sup>

$$\left. \begin{aligned}&\text{Tax revenue} \\ &+ \text{Private saving} \\ &- \text{Investment (or } + \text{ Disinvestment)}\end{aligned} \right\} = \text{Government expenditure}$$

From this restatement it is possible to express the net national product as a mixture of product, saving, and tax revenue. The net national product is the sum of consumer expenditure, investment, and government expenditure. By substituting for government expenditure the expression given immediately above, that is, tax revenue + private saving - investment, the summation gives net national product = consumer expenditure + private saving + tax revenue. By using gross investment and gross saving the gross national product can be expressed in similar terms.<sup>2</sup>

11. To grasp the implications of the statement that the government's deficit on current account must equal the excess of private saving over investment, the beginning student will find it useful to work through the money flows in more detail, as is done in this section, although it involves some repetition of earlier statements.

Whenever the government borrows from the commercial or central banking system, thereby causing money to be created (including bank deposits in the term "money") and spends it within the country, the year must end with someone holding the extra money. Although there may be individuals and corporations who end the year holding less money than they held at the beginning, there are others who are holding more; and the sum of the increases in money-holdings by the latter group must exceed the sum of the decreases in money-holdings by the first group, by an amount equal to the volume of added money created during the year. If the banks have created money only for the government, and have not destroyed any money by reducing the amount of loans outstanding to individuals and corporations, or by selling bank assets to them, then the net increase in money-holdings

<sup>1</sup> Cf. Nicholas Kaldor, "The 1941 White Paper on National Income and Expenditure," *Economic Journal*, June-September, 1942, p. 207, Table I.

<sup>2</sup> Cf. Alvin H. Hansen, "National Income and Gross National Product," in *Economic Policy and Full Employment*, pp. 34-35.

throughout the country equals the net borrowings of the government from the deposit-creating banks for the same period.

The increase in money-holdings caused by the deficit that is financed through government borrowing from the banks can be traced through one or more stages along alternate routes. It will be seen that, whichever route is followed, the government deficit will be matched either by (a) an equal amount of disinvestment in the private sector of the economy, or (b) an equal amount of private saving.

At first, of course, the increase in money-holdings appears in the government's own cash balance. Then the government spends the money, in any one of several ways.

First, the government may purchase an already existing asset, like a stock of canned goods or a factory building, at a price that brings no gain or loss to the seller. The seller thereby increases his cash holdings by the amount the government has borrowed from the banks. He disinvests. The government invests, and therefore incurs no deficit. Investment and saving for the entire economy are both zero. If the government's outlay is instead considered an expenditure on current account, it produces an equivalent deficit. It would be so considered if the government, having purchased canned goods, distributed them as relief in kind. The government's investment is followed by disinvestment as it distributes the food to consumers. The three stages would be, for example:

1. At beginning of year:

| Business firm |        | Government    |   |
|---------------|--------|---------------|---|
| <i>Assets</i> |        | <i>Assets</i> |   |
| Stock of food | \$1000 |               | 0 |

2. After the bank loan and the government purchase:

| Business firm |        | Government         |        |
|---------------|--------|--------------------|--------|
| <i>Assets</i> |        | <i>Assets</i>      |        |
| Cash          | \$1000 | Stock of food      | \$1000 |
|               |        | <i>Liabilities</i> |        |
|               |        | Bank loan          | \$1000 |

3. After the food is distributed to consumers:

| Business firm |        | Government         |        |
|---------------|--------|--------------------|--------|
| <i>Assets</i> |        | <i>Assets</i>      |        |
| Cash          | \$1000 |                    | 0      |
|               |        | <i>Liabilities</i> |        |
|               |        | Bank loan          | \$1000 |
| Consumption   | \$1000 |                    |        |

This third stage consists of \$1000 consumption by the government (or by the consumers on behalf of the government). Since the government has no income, it is dissaving \$1000.

For the year as a whole, the quantities in the identity stated in § 10 are:

$$\left. \begin{array}{l} \text{Saving by individuals (0)} \\ \text{Saving by corporations (0)} \end{array} \right\} = 0 = \left\{ \begin{array}{ll} \text{Investment} & -\$1000 \\ \text{Government deficit} & \$1000 \end{array} \right.$$

or, alternately,

$$\left. \begin{array}{l} \text{Saving by individuals (0)} \\ \text{Saving by corporations (0)} \\ \text{Saving by government } (-\$1000) \end{array} \right\} = \text{Investment } (-\$1000)$$

Second, the government may buy a service, as in paying wages. The entire payment is income to the recipient. If he spends none of it before the year ends, his saving equals the amount the government borrowed from the banking system. If he does spend the money, but simply in acquiring a non-cash asset involving no profit or loss to the seller, he is merely shifting the form of his assets, and his saving for the year is still equal to the amount the government borrowed from the banking system. He has invested, and his vendor has disinvested. If he spends the money in purchasing a service from someone else, who holds the money at the end of the year, both the act of saving and the possession of the cash are transferred to this third person. But in any case the equality of amount of government borrowing from the bank with the amount of private saving during the year is preserved.

If the government finances its expenditures by drawing down a cash balance that it possessed at the start of the year, it thereby throws additional money into the private sector of the economy, just as it does when it borrows from the banking system (creates new money) and spends it. When the accounts are taken at the end of the year, someone must be holding this additional stock of money that has been injected into the private enterprise sector. Saving has occurred to this amount, and it equals the government deficit financed by drawing on the cash balance.

#### IV. RECENT COMPUTATIONS OF THE SAVING-INVESTMENT IDENTITY

**12.** For the years 1939-43 the Department of Commerce has published a series for the United States showing saving, investment, and



TABLE 35  
Absorption of Gross Savings by United States Government  
1939-43 (Commerce)<sup>a</sup>

(in billions of current dollars)

| Line | Item   | 1939 | 1940 | 1941 | 1942 | 1943 |
|------|--|------|------|------|------|------|
| 1    | Net savings of individuals   | 6.0  | 7.3  | 14.2 | 28.0 | 33.0 |
| 2    | Net corporate savings  | .4   | 1.8  | 4.0  | 4.4  | 4.9  |
| 3    | Net business tax accruals  | .3   | 1.3  | 4.8  | 4.6  | 2.8  |
| 3a   | Excess of personal tax payments over budget receipts                   | ..   | ..   | .    | ..   | 1.2  |
| 4    | Depreciation and depletion charges                                     | 6.2  | 6.4  | 7.0  | 7.7  | 8.2  |
| 5    | Capital outlays charged to current expense                             | .7   | .9   | 1.3  | 1.1  | .8   |
| 6    | Other business reserves  | .8   | .7   | .8   | .8   | .8   |
| 7    | Inventory revaluation adjustment                                       | -.4  | -.4  | -3.2 | -2.1 | -.2  |
| 8    | Adjustment for discrepancies   | 0    | -.4  | -1.7 | -.6  | 1.2  |
| 9    | Gross private savings  | 14.1 | 17.5 | 27.2 | 43.9 | 52.7 |
| 10   | Less: Private gross capital formation                                  | 10.9 | 14.8 | 19.0 | 7.5  | 2.2  |
| 11   | Gross private savings available to government                          | 3.2  | 2.7  | 8.2  | 36.5 | 50.6 |
| 12   | State and local surplus  | -.3  | .4   | 1.0  | 1.9  | 2.1  |
| 13   | Social insurance fund savings  | 1.0  | .9   | 1.5  | 2.1  | 2.9  |
| 14   | Total gross savings available to Federal Government                    | 3.9  | 4.1  | 10.8 | 40.4 | 55.7 |
| 15   | Net budget deficit   | 4.0  | 3.8  | 10.2 | 39.6 | 53.5 |
| 16   | Net expenditures in checking accounts of government corporations, etc. | -.8  | -.2  | 1.1  | 3.6  | 2.4  |
| 17   | Increase in general fund balance                                       | -.6  | -.5  | 1.6  | 7.0  | 1.8  |
| 18   | Increase in public debt  | 2.5  | 3.1  | 12.9 | 50.2 | 57.7 |
| 19   | Less: Increase in general fund balance                                 | -.6  | -.5  | 1.6  | 7.0  | 1.8  |
| 20   | Less: Other increase in public debt not requiring saving               | -.8  | -.4  | .5   | 2.8  | .2   |
| 21   | Increase in public debt not requiring saving                           | -1.4 | -1.0 | 2.2  | 9.8  | 2.0  |
| 22   | Total gross savings absorbed by Federal Government                     | 3.9  | 4.1  | 10.8 | 40.4 | 55.7 |

<sup>a</sup> Survey of Current Business, April, 1944, Table 6, p. 11.

government deficit. The data and the description of sources are given in much more detail than in the somewhat similar tabulations in the Budget Messages and Economic Report (§ 13). The Commerce table, reproduced here as Table 35, is headed "Absorption of Gross Savings by Federal Government" and is designed to show the monetary

sources from which the deficit "was directly or indirectly financed."<sup>1</sup>

For example, private saving in 1943, gross (that is, inclusive of additions to depreciation and depletion accounts and other reserves), was \$52.7 billion. Private investment, gross, was \$2.2 billion and the government deficit on current account was \$50.7 billion. This last figure is not given by itself in Table 35. But it is the result of subtraction of the state and local surplus of \$2.1 billion and the social insurance fund surplus of \$2.9 billion from the federal deficit (budget deficit of \$53.5 billion plus extra-budget deficit of government corporations and other sources of \$2.4 billion) after eliminating that part of the deficit that "does not require saving" (\$0.2 billion).

The change in the government's cash balance, of course, should not enter the equation of saving = investment + deficit. It is in effect ignored by being entered at one place and removed at another in the table. The "other increase in public debt not requiring saving" is an adjustment of the combined net budget deficit and extra-budgetary deficit of government corporations and other extra-budgetary categories. In this way elements of expenditure and revenue are eliminated that, not being national income items, are inappropriate in computing government saving or dissaving (surplus or deficit). The procedure followed is (a) to decrease the deficit total by eliminating the government corporation deficit except for the part caused by "net non-loan transactions"; (b) to decrease the deficit total by eliminating government budget expenditures that were not on current account (purchase of existing assets and capital transactions) or, if so, were not income to residents of the United States (net prepayments, and tax and renegotiation refunds); and (c) to increase the deficit total by excluding receipts that were capital receipts, not coming out of taxpayers' income as "taxes" (proceeds of sales of securities owned by the government, seignorage on silver, and return of surplus funds of government corporations).<sup>2</sup>

Private saving (here, gross) of \$52.7 billion equals private investment (here, gross) of \$2.2 billion plus government deficit on current

<sup>1</sup> Milton Gilbert and George Jaszi, "National Income and National Product in 1942," *Survey of Current Business*, March, 1943, p. 19. See also their next annual résumé, *Survey of Current Business*, April, 1944, p. 12.

<sup>2</sup> For details see Milton Gilbert and George Jaszi, "National Income and National Product in 1942," *Survey of Current Business*, March, 1943, notes to Tables 6, A, and B. In terms of the line numbers given in footnote 1 to Chapter 6, § 27, the following items only are concerned in the present adjustment: lines 12, 13, 16, 17, and 21.

account (\$50.7 billion). The discrepancy of \$0.2 billion presumably arises from rounding the figures.

Saving by individuals is computed by the Commerce Department on the basis of the "income payments" received by individuals, not the national income received by them (§ 19). This might be thought to throw out of balance the equation,  $\text{saving} = \text{investment} + \text{deficit}$ , since this equation has been explained up to this point in terms of national income. But all the differences between income payments and national income have to do with government outgo and intake. If, as is the case in Table 35, the government deficit (dissaving) is computed to reflect the items that represent income payments and to omit those that do not, the change in individuals' saving resulting from the shift to the income-payments basis is offset by an opposite change in the amount of government saving, and the equation continues to hold.

In its forthcoming revised series on national income, the Department of Commerce includes an account entitled "Balance of Gross Saving and Investment," which carries as debit items (1) gross private domestic investment, (2) net foreign investment, and (3) Government deficit (+) or surplus (-) on income and product transactions. The credit entries consist of the various types of saving, net or gross, including depreciation charges, and other adjustments necessary to bring this saving side, which starts out with a saving total derived under the factor-payment approach, into balance with the investment side, which is computed under the product approach and therefore already reflects, for example, an inventory revaluation adjustment.<sup>1</sup>

Saving by individuals may be expressed as a percentage of individuals' disposable income, that is, personal income after subtracting personal taxes. This percentage is influenced, however, by the proportion of business taxes to personal taxes, assuming that the former are shifted and the latter are not. In period 1, business firms pay \$250 wages, add \$100 to their net plant, equipment, and inventories, and sell \$150 of product to consumers, thus obtaining zero profit. The wage earners pay \$50 personal tax, and the government pays \$50 wages, producing a service to consumers. Disposable income is  $\$250 \text{ wages} + \$50 \text{ wages} - \$50 \text{ tax}$ , or \$250, and individuals' saving

<sup>1</sup> U.S. Department of Commerce, *National Income and Product Statistics for the United States, 1929-46*, Table 6.

is \$100, or 40 per cent of disposable income. In period 2 everything is the same, except that the government collects its \$50 tax from the business firms, who shift it to consumers. Disposable income rises to \$300, there being no personal tax, and individuals' consumption expenditure rises to \$200 to cover the business tax. Saving, still \$100, is now only  $33\frac{1}{3}$  per cent of disposable income. In general, an increase in the rôle of business taxes tends to decrease the ratio of individuals' saving to disposable income by adding equal amounts to disposable income and consumer expenditure. A study of changes in this ratio over time must therefore allow, through deflation by price indexes or otherwise, for changes that have occurred in the tax system.

**13.** A condensed statement of gross national product for 1939 and 1944, under the heading "The Nation's Economic Budget," appeared in the 1946 Budget Message of the President of the United States, delivered in January, 1945. The data, revised, were presented in the Budget Message for 1947, but in the following year they were published in the President's Economic Report of January 8, 1947. Table 36 reproduces the data from the Economic Report, covering the calendar years 1939, 1944, and 1946.<sup>1</sup>

The economy is divided into four groups: consumers, business, international, and government, with a fifth grouping to eliminate transfer payments included in the other groups. The presentation is based on a double-entry system, like that of Table 3 in Chapter 3 above, and the Netherlands table referred to there (§ 12), but only some end data are presented. Consumer expenditures are shown, for example, but the "receipts" item of business is only the undistributed profits and reserves, not the receipts from consumers (and international, and government). And business "expenditures" are defined to include only outlay for gross capital formation. This unusual terminology is designed to obtain a gross national product total by adding either the "receipts" or the "expenditures," and it also emphasizes the saving-investment equation. In calendar 1939, for example, the gross saving total is found by adding the excess of consumer-disposable income over consumer expenditures, the undistributed profits and reserves of business, and the excess of government

<sup>1</sup> *The Economic Report of the President to the Congress, January 8, 1947*, p. 7, Table I and p. 8, Table II (showing fourth quarter, 1946, seasonally adjusted rates). Details are given in Appendix A, pp. 35-40. See also Grover William Ensley, "A Budget for the Nation," *Social Research*, September, 1943. For the British "White Papers" on the budget and national income, see Chapter 11 below.

TABLE 36

The Nation's Economic Budget, 1939, 1944, and 1946 <sup>a</sup>

(in billions of current dollars)

| Economic Group                                  | Prelude Calendar<br>Year 1939 |              |                            | War Calendar<br>Year 1944 |              |                            | Reconversion Calendar<br>Year 1946 <sup>b</sup> |              |                            |
|---|-------------------------------|--------------|----------------------------|---------------------------|--------------|----------------------------|---|--------------|----------------------------|
|   | Receipts                      | Expenditures | Excess (+),<br>Deficit (-) | Receipts                  | Expenditures | Excess (+),<br>Deficit (-) | Receipts  | Expenditures | Excess (+),<br>Deficit (-) |
| <b>Consumers</b>                                |                               |              |                            |                           |              |                            |   |              |                            |
| Income after taxes                              | 68                            | 62           | +6                         | 133                       | 99           |                            | 142   | 127          |                            |
| Expenditures                                    |                               |              |                            |                           |              |                            |   |              |                            |
| Savings (+)                                     |                               |              |                            |                           |              | +34                        |   |              | +15                        |
| <b>Business</b>                                 |                               |              |                            |                           |              |                            |   |              |                            |
| Undistributed profits and reserves              | 8                             | 10           |                            | 11                        | 4            |                            | 11  | 27           |                            |
| Gross capital formation <sup>c</sup>            |                               |              |                            |                           |              |                            |   |              |                            |
| Excess of receipts (+) or capital formation (-) |                               |              | -2                         |                           |              | +7                         |   |              | -16                        |
| <b>International</b>                            |                               |              |                            |                           |              |                            |   |              |                            |
| Net imports                                     |                               |              |                            |                           |              |                            |   |              |                            |
| Net exports                                     |                               | 1            | -1                         |                           | -2           | +2                         |   | 5            | -5                         |
| Net expenditures on foreign account             |                               |              |                            |                           |              |                            |   |              |                            |
| <b>Government (federal, state, local)</b>       |                               |              |                            |                           |              |                            |   |              |                            |
| Receipts from the public other than borrowing   | 15                            | 18           | -3                         | 59                        | 104          |                            | 57  | 55           |                            |
| Payments to the public                          |                               |              |                            |                           |              |                            |   |              |                            |
| Excess of receipts (+) or payments (-)          |                               |              |                            |                           |              | -45                        |   |              | +2                         |
| <b>Adjustments</b>                              |                               |              |                            |                           |              |                            |   |              |                            |
| For government transfers to public <sup>d</sup> | -2                            | -2           | 0                          | -5                        | -5           | 0                          | -16   | -16          | 0                          |
| For government transfers abroad <sup>e</sup>    |                               |              |                            |                           | -2           | +2                         |   | -4           | +4                         |
| <b>Total, Gross National Product</b>            | 89                            | 89           | 0                          | 198                       | 198          | 0                          | 194   | 194          | 0                          |

<sup>a</sup> Supporting tables and descriptive material are given in an appendix to the Economic Report.<sup>b</sup> Preliminary.<sup>c</sup> Includes residential construction, but excludes net exports.<sup>d</sup> Includes transfers of funds which are included in private receipts and government expenditures but do not involve addition to the nation's output, such as unemployment compensation, veterans' readjustment allowances, mustering-out pay, etc.<sup>e</sup> Includes loans to foreign governments, subscriptions to international organizations, reimbursable lend-lease, etc.

receipts over government payments:  $6 + 8 - 3 = 11$ . The gross investment total is the sum of business gross capital formation and the excess of net exports over net imports:  $10 + 1 = 11$ .

In 1944, gross saving thus computed is zero and gross investment is  $4 - 2 = 2$ . The discrepancy arises from the fact that the government's dissaving (45) is overstated because government expenditures include loans to foreign governments and other items that are not included as receipts anywhere in the domestic economy; these single-entry items must be deducted if the double-entry national income statement is to be in balance. A similar adjustment is required for 1946.

The form adopted in the "Nation's Economic Budget" is too condensed to supply an explicit tabulation of "the flow of funds by which major economic groups are interrelated in the national economy."<sup>1</sup> For this purpose a series of tables is needed in which every money item is specifically entered twice, as in the five accounts in the revised Commerce series (Chapter 3, § 12).

The "Nation's Economic Budget" employs the Commerce concepts, with some adjustments to utilize the government budget data more readily. Consumer expenditures do not include expenditures for residential construction. Consumer income is income payments, including net profits of unincorporated enterprises, and after subtracting payroll, income, and estate taxes. The federal government items reflect "receipts from and payments to the public," excluding intra-governmental transactions and "non-cash" transactions like accrued interest on Savings Bonds; hence the federal receipts and expenditures totals included in the government item differ somewhat from those shown in the usual federal budget statements.<sup>2</sup>

The "business" item is not homogeneous with respect to corporate and non-corporate business, owing to some difficulty in segregating the data. The "undistributed profits" part of the "receipts" includes corporations only, while the "reserves" part includes unincorporated enterprises and owner-occupied dwellings. The "expenditures" item (gross capital formation) also includes unincorporated enterprises and residential construction financed and occupied by owners.

<sup>1</sup> *Economic Report*, p. 35.

<sup>2</sup> For details of the "non-cash" compilation, see *Budget Message of the President and Summary Budget Statements for the Fiscal Year Ending June 30, 1948*, p. A128, Table 18.

## V. TESTS FOR INTERNAL CONSISTENCY AND PLAUSIBILITY OF NATIONAL-INCOME FORECASTS

14. A statement of the national income of a past period must be internally consistent in its component items. Total saving must equal total investment, for example. The total of factor payments — wages, profits, interest, and net rent — must equal the total of products — consumer purchases, whatever government purchases are included in national income, and private net capital formation.

Likewise, a forecast of the national income must be internally consistent. In building up a forecast of the total from independently estimated components, inconsistencies may appear, indicating that the various independent estimates of the components are not compatible with each other. At least one of them (and very likely all of them, in practice) is in error. The following independent estimates, for example, are not consistent with each other: (a) consumer expenditures of 100 and consumer saving of 20; (b) government services to consumers and personal tax revenues of 30 each; (c) net increase in inventories and producers' durable goods of 10; (d) no net change in claims on foreigners; and (e) no corporate saving. Total saving is 20 and total investment is 10.

15. Sometimes the national income analyst forecasts one consistent set of national income items and then wants to estimate an alternative set for a higher or lower level of national income. In passing from one internally consistent set to another, he needs to guard against implausibility as between the two sets. For example, he might reach the pessimistic conclusion that in view of expected private net capital outlays of only 10, and government expenditures (all on services to consumers) of 30, and given an income-tax rate of  $33\frac{1}{3}$  per cent, and, further, in view of the consumers' inclination to save a part of any increase in income, a consistent position could be obtained only if factor income before tax was as low as 90. Then the tax would be 30, private saving 10, and consumer expenditure 50. National income would be 90. If this represents a low level of employment for the economy as a whole, the analyst may experiment in his forecasts by assuming that the government spends 20 more on services to consumers, using money newly created for that purpose by the sale of government securities to the banking system. He can obtain a new and internally consistent picture by assuming that government expenditures are 50, consumer income before taxes is 110, consumer

saving is 30, and the other items remain unchanged. (For simplicity, it is assumed that the new income goes to persons whose incomes are too small to be subject to tax.) The national income is 110. But the second forecast is not plausible in the light of the first. It implies that if the consumers' incomes after tax were 80 instead of 60, consumers would still spend only 50. Data on past periods of rising income indicate that an increase in consumers' incomes is accompanied by an increase in consumption expenditures. The two cases are not quite the same, to be sure; passing from one actual period into another actual period is not the same as passing from one to another of alternative sets of assumptions for one period. The former involves dynamic analysis, the latter only static analysis. But there is enough implication in the former for the latter to put the analyst on his guard.

If the government's expenditure of 50 is assumed to be associated with consumer expenditure of 52, consumer saving of 30, tax revenue of 30, and private net capital formation of 10, giving a national income of 112, the second situation is still not plausible, considered in the light of the first. It implies that an initial increase in consumer income of 20 (to the additional government employees) is associated with further consumer spending to an amount no greater than it would be if consumers spent, thereby producing income to others, only one eleventh of their increase in income, within the period in question. The increment to national income (still assumed to be non-taxable) would be  $20 + \frac{1}{11}$  of  $20 + \frac{1}{11}$  of  $\frac{1}{11}$  of 20, and so on, which equals 22. In Keynesian terminology, the implicit "multiplier" of the additional 20 of government expenditure is still too low to be plausible, being only  $\frac{11}{10}$ , although larger than in the preceding example, where it was only 1.

The illustrations in this section and in § 14 are summarized in Table 37.<sup>1</sup>

**16.** One of the few discussions by national income analysts of the relative suitability of the Keynesian and Robertsonian definitions of saving and investment for national income compilations is that by

<sup>1</sup> For examples of models, projections, or forecasts illustrating the points in §§ 14–15, see, among others, *National Budgets for Full Employment* (National Planning Association, Washington, D.C., 1945); Erik Lundberg and Ingvar Ohlsson, "Models of the Future National Income in Sweden," *Bulletin of the Oxford University Institute of Statistics*, September, 1946; Jerome Cornfield, W. Duane Evans, and Marvin Hoffenberg, "Full Employment Patterns, 1950," *Monthly Labor Review*, February and March, 1947; and Richard A. Musgrave, "Fiscal Policy, Stability, and Full Employment," in *Public Finance and Full Employment*, Board of Governors, Federal Reserve System, December, 1945.



TABLE 37

## Hypothetical Examples of Internal Inconsistency or Implausibility in National Income Tables

|                                  | Case I |     |     | Case II |     | Case III |     |
|----------------------------------|--------|-----|-----|---------|-----|----------|-----|
|                                  | a      | b   | c   | d       | e   | d        | f   |
| National income                  | 140    | 150 | 140 | 90      | 110 | 90       | 112 |
| Consumer expenditures            | 100    | 100 | 100 | 50      | 50  | 50       | 52  |
| Government services to consumers | 30     | 30  | 30  | 30      | 50  | 30       | 50  |
| Net increase in inventory, etc.  | 10     | 20  | 10  | 10      | 10  | 10       | 10  |
| Consumer saving                  | 20     | 20  | 20  | 10      | 30  | 10       | 30  |
| Government saving                | 0      | 0   | 0   | 0       | -20 | 0        | -20 |
| Business saving                  | 0      | 0   | -10 | 0       | 0   | 0        | 0   |
| Total saving                     | 20     | 20  | 10  | 10      | 10  | 10       | 10  |
| Total investment                 | 10     | 20  | 10  | 10      | 10  | 10       | 10  |

(a) Inconsistent in that  
 $S = 20$   
 $I = 10$

but

$S = I$   
 by definition.

(b) and (c) consistent because

(b)  $S = 20$   
 $I = 20$

(c)  $S = 10$   
 $I = 10$

(c) Implausible in that consumers  
 save *all* of the increase in  
 income.

(f) Implausible in that implicit  
 "multiplier" is too low.

$\gamma =$  Final increase in income

$\gamma_1 =$  Initial increase in income

$K =$  Multiplier

$m =$  Marginal propensity to consume

Then  
 $\gamma_1 = K\gamma_1$

$$22 = K20$$

$$K = \frac{11}{10} \text{ (too low)}$$

And

$$K = \frac{1}{1-m}$$

$$\frac{11}{10} = \frac{1}{1-m}$$

$$m = \frac{1}{11} \text{ (too low)}$$

Harold Barger.<sup>1</sup> Barger concludes that for his purposes he may escape the choice by omitting all measure of saving. In his Appendix F, comparing other estimates of outlay with his own, he makes use of the saving-investment identity to compare Lough's and Goldsmith's estimates of saving with Warburton's and his own estimates of net capital formation and net private investment plus net public outlay, respectively. He also compares the National Resources Committee's estimates (1935-36 data) of consumers' outlay and saving with his data for consumers' outlay and investment plus public outlay.

## VI. AMOUNT OF SAVING IN THE UNITED STATES

### A. Government Saving

17. Estimates of government saving over a period of years have been made by Kuznets and the British White Paper, but not by the Commerce Department. Both Kuznets and the White Paper define saving as in § 4; that is, the surplus of current revenues over expenditures other than outlays for investment. Since outlays for investment are somewhat narrowly defined by both to include practically nothing but construction<sup>2</sup> — and in wartime, construction for war purposes is excluded<sup>3</sup> — the data tend to underestimate government saving.

The government may, and commonly does, save more or less than it invests, by increasing or decreasing its holdings of securities and cash. Kuznets obtains his estimates of government saving by comparing the net change during a year in all assets (investment assets, securities, and cash) presumably held by the government with the net change in the government's debt.<sup>4</sup> When the former is the greater, algebraically, government saving is positive.

Table 38 shows Kuznets' estimates of saving by government (federal, state, and local) in the United States, 1919-38, in absolute terms and as a percentage of national income. In interpreting the percentage figures, it must be recalled (§ 8) that, according to Kuznets, when a government dissaves (current revenues fall short of

<sup>1</sup> *Outlay and Income in the United States, 1921-1938*, pp. 24-30. Cf. James W. Angell, *Investment and Business Cycles*, pp. 208-210, and Appendix IV.

<sup>2</sup> Chapter 6, § 29, and Cmd. 6623, p. 9.

<sup>3</sup> See, however, Kuznets, *National Product in Wartime*, part I.

<sup>4</sup> Kuznets, *National Income and Its Composition, 1919-1938*, II, 414; Marvin Hoffenberg, "Estimates of National Output . . ." *Review of Economic Statistics*, May, 1943, p. 136. For the year 1919, especially, it must be noted that Kuznets includes, among changes in government holdings of securities, changes in claims against foreign governments. If this item were excluded, the national income and the saving by government for 1919 would apparently be some \$2 billion smaller than Kuznets' series shows. And 1920 and 1921 appear to be similarly affected, to a much smaller degree. Kuznets, *op. cit.*, II, 437-40.

TABLE 38

Net Saving by Government, United States, 1919-38 (Kuznets)<sup>a</sup>

(in billions of current dollars)

|                  | Absolute<br>Amount | Per Cent of<br>National Income |
|------------------|--------------------|--------------------------------|
| 1919             | \$-1.3             | -2.0                           |
| 1920             | 1.9                | 2.6                            |
| 1921             | 0.96               | 1.6                            |
| 1922             | 0.85               | 1.4                            |
| 1923             | 1.6                | 2.2                            |
| 1924             | 1.7                | 2.4                            |
| 1925             | 1.6                | 2.1                            |
| 1926             | 2.2                | 2.6                            |
| 1927             | 2.3                | 2.9                            |
| 1928             | 1.9                | 2.3                            |
| 1929             | 2.2                | 2.6                            |
| 1930             | 2.1                | 2.7                            |
| 1931             | 0.34               | 0.57                           |
| 1932             | -0.91              | -2.1                           |
| 1933             | -0.11              | -0.27                          |
| 1934             | -0.58              | -1.2                           |
| 1935             | -1.7               | -3.2                           |
| 1936             | -2.2               | -3.5                           |
| 1937             | 0.50               | 0.70                           |
| 1938             | -0.18              | -0.27                          |
| Total, 1919-1938 | \$13.17            | 0.90                           |

<sup>a</sup> Kuznets, *National Income and Its Composition, 1919-1938*, I, 216-18, Table 22.

non-construction expenditures) it thereby incurs a loss of the same amount, thus reducing the national income. For the period 1919-30, government saving totaled \$18 billion; for the period 1931-38, government dissaving totaled \$5 billion.

Hoffenberg presents hitherto unpublished estimates of staff members of the Securities and Exchange Commission for net government saving, 1933-1941 (in billions of dollars), respectively: -0.1, -0.3, -1.0, -2.1, 0.2, 0.2, -1.7, -1.5, -8.0. The last figure is not strictly comparable with those of earlier years. The correspondence with Kuznets' series is fairly close.<sup>1</sup>

## B. Corporate Saving

18. Corporate net saving for a year is the corporate profits of that

<sup>1</sup> Hoffenberg, *op. cit.*, pp. 130-31, Table 4; description, pp. 136-37. For an earlier series by the same computers, with an explanation of how it is derived, see R. W. Goldsmith and Walter Salant, "The Volume and Components of Saving in the United States, 1933-1937," *Studies in Income and Wealth*, III, 285-93.

year, after all taxes, minus the dividends paid to individuals in that year. For this purpose, the "profits" of corporations do not include dividends received by corporations. In effect, intercorporate dividends are ignored (Chapter 5, § 47). Table 39 shows corporate net saving for 1919-38 (Kuznets) and 1929-46 (Commerce). The difference between the Kuznets and the Commerce series reflects chiefly the adjustments that Kuznets makes to express inventory change in current prices and to put depreciation on a current replacement-cost basis (Chapter 5, §§ 30, 42), and some differences in source material utilized. In both series, the dividends deducted include only asset dividends (Chapter 5, § 46).

Over the entire period 1919-38, corporations dissaved \$9 billion, according to Kuznets' estimates. This total, of course, does not include any spending, out of borrowed funds or money obtained from new capital issues, on capitalized outlays. During the same period the government (federal, state, and local) saved \$13 billion. In other words, in terms of paying out to the consuming public, as suppliers of the factors of production, more than they received from them, as purchasers of output or as taxpayers, private corporations surpassed government by at least \$22 billion for the twenty-year period as a whole (see also Chapter 5, § 54), apart from outlays that were recorded as capitalized, in Kuznets' computations. During the period 1931-38, government dissaving was \$5 billion, and corporate dissaving, \$20 billion (Kuznets).

The annual amounts of saving are expressed in Tables 38 and 39 as percentages even when they are negative; such expression is more helpful than misleading in this case, provided it is recalled that the percentages are not of what national income would have been without the negative item, but of what it is including that item.

The cumulated figures can give only a rough indication, since they are not completely adjusted for changes in price levels. At the low level of prices that prevails at the bottom of a depression, an absolute amount of dissaving — that is, the difference between the year-beginning net worth of a corporation and the smaller year-end net worth — should, of course, be made larger if it is to be added to an absolute change in net worth occurring at a higher price level. Otherwise the dissaving in depression will be understated.<sup>1</sup> This assumes that any

<sup>1</sup> W. L. Crum, "The National Income and Its Distribution," *Journal of the American Statistical Association*, XXX (1935), 35-46.

**TABLE 39**  
**Corporate Net Saving, United States, 1919-46 (Kuznets and Commerce)**

(in billions of current dollars)

|                | Kuznets <sup>a</sup> |                             | Commerce <sup>b</sup> |                             |
|----------------|----------------------|-----------------------------|-----------------------|-----------------------------|
|                | Absolute Amount      | Per Cent of National Income | Absolute Amount       | Per Cent of National Income |
| 1919           | \$1.0                | 1.6                         | \$2.8                 |                             |
| 1920           | 2.2                  | 3.0                         | 1.1                   |                             |
| 1921           | 0.71                 | 1.2                         | -2.5                  |                             |
| 1922           | 0.23                 | 0.38                        | 1.0                   |                             |
| 1923           | 0.97                 | 1.4                         | 1.4                   |                             |
| 1924           | 0.42                 | 0.58                        | 0.9                   |                             |
| 1925           | 0.83                 | 1.1                         | 1.8                   |                             |
| 1926           | 2.3                  | 2.8                         | 1.5                   |                             |
| 1927           | 0.56                 | 0.70                        | 0.5                   |                             |
| 1928           | 0.92                 | 1.1                         | 1.5                   |                             |
| 1929           | 1.5                  | 1.8                         | 1.2                   | 1.5                         |
| 1930           | -0.67                | -0.86                       | -3.9                  | -5.7                        |
| 1931           | -3.1                 | -5.1                        | -5.9                  | -10.8                       |
| 1932           | -4.8                 | -11.1                       | -6.4                  | -15.9                       |
| 1933           | -4.0                 | -9.5                        | -2.8                  | -6.7                        |
| 1934           | -3.3                 | -6.6                        | -2.2                  | -4.4                        |
| 1935           | -2.1                 | -3.9                        | -1.3                  | -2.3                        |
| 1936           | -0.71                | -1.1                        | -0.9                  | -1.4                        |
| 1937           | -1.4                 | -2.0                        | -0.8                  | -1.1                        |
| 1938           | -0.70                | -1.1                        | -1.5                  | -2.4                        |
| Total, 1919-38 | -9.04                | -0.7                        |                       |                             |
| 1939           |                      |                             | 0.4                   | 0.6                         |
| 1940           |                      |                             | 1.8                   | 2.3                         |
| 1941           |                      |                             | 4.0                   | 4.1                         |
| 1942           |                      |                             | 4.4                   | 3.6                         |
| 1943           |                      |                             | 5.5                   | 3.7                         |
| 1944           |                      |                             | 5.4                   | 3.4                         |
| 1945           |                      |                             | 4.5                   | 2.8                         |
| 1946           |                      |                             | 7.9                   | 4.7                         |
| Total, 1929-46 |                      |                             | 9.4                   | 0.8                         |

<sup>a</sup> Kuznets, *National Income and Its Composition, 1919-1938*, I, 216-17, Table 22. After inventory adjustment and depreciation adjustment (Chapter 5, § 1, 30, 42).

<sup>b</sup> *Survey of Current Business*, April, 1944, p. 15, Table 15 (1929-40); February, 1946, p. 8, Table 7 (1941-45); February, 1947, pp. 7, 8, Tables 2, 4 (1946). Data for 1919-28 from Hoffenberg, *op. cit.*, p. 130. For estimates by the staff of the Securities and Exchange Commission, for 1933-37, which do not differ greatly from those by Commerce, see R. W. Goldsmith and Walter Salant, "The Volume and Components of Saving in the United States, 1933-1937," *Studies in Income and Wealth*, III, 284-85.

pair of year-beginning and year-end net worths are computed on the same price level. But during a downward movement of prices, when the year-end assets are being computed on a lower price level than the year-beginning assets, the dissaving will tend to be overstated rather than understated, for comparison with a year of stable prices.<sup>1</sup> However, most of these elements of difference between year-beginning and year-end price levels have been removed in the Kuznets series in Table 39.

### C. Saving by Individuals

19. The saving by an individual is (a) the income received by him, including dividends and including his entire share in the year's profits of a partnership or a sole proprietorship, whether distributed or not, (b) minus the taxes paid by him during the year (or, alternatively, the tax liabilities accrued by him during the year), (c) minus his expenditures on consumption goods and services.

Table 40 presents estimates of saving by individuals in the United States, 1919-45. In both the Kuznets and Commerce series, consumption expenditure does not include the purchase of a house by an individual; money so expended is counted as money saved. Kuznets tends to show a smaller absolute and percentage amount of saving by individuals, by (a) including imputed net rent on owner-occupied homes in income and (b) including in consumer expenditure the "expenditure" for imputed gross rental on such homes (including, of course, depreciation).<sup>2</sup> Both series include unincorporated enterprises; the saving is what is left of the income, including profits of partnerships and sole proprietorships, after subtracting expenditures on consumption and personal taxes.<sup>3</sup>

Kuznets' series of saving by individuals is directly comparable with his national income total, since it shows what consumers have left of factor income, excluding transfer income (but see § 20). However, the series presented in Table 40 is subject to slight correction as a result of revisions Kuznets has subsequently made in his estimates

<sup>1</sup> M. A. Copeland, "Concepts of National Income," *Studies in Income and Wealth*, I, 31.

<sup>2</sup> Kuznets, *op. cit.*, p. 277.

<sup>3</sup> *Ibid.*, Table 39, p. 276, presents data for "individuals" and "entrepreneurs" (here combined) separately. For a discussion of the attempts formerly made to measure the amount of the unincorporated concern's profits that were saved by the concern (not distributed to the proprietors) see M. A. Copeland, "Concepts of National Income," *Studies in Income and Wealth*, I, 21-22, 51-53, and discussion by Kuznets, *ibid.*, pp. 41-42.

TABLE 40

# Saving by Individuals and Unincorporated Enterprises, United States, 1919-46 (Kuznets and Commerce)

(in billions of current dollars)

|                | Kuznets                      |                             | Commerce                                |                 |                             |
|----------------|------------------------------|-----------------------------|---|-----------------|-----------------------------|
|                | Absolute Amount <sup>a</sup> | Per Cent of National Income | Unadjusted Absolute Amount <sup>b</sup> | Adjusted        |                             |
|                |                              |                             |   | Absolute Amount | Per Cent of National Income |
| 1919           | \$10.6                       | 16.5                        |   |                 |                             |
| 1920           | 7.2                          | 9.7                         |   |                 |                             |
| 1921           | 1.6                          | 2.7                         |   |                 |                             |
| 1922           | 3.4                          | 5.6                         |   |                 |                             |
| 1923           | 6.0                          | 8.4                         |   |                 |                             |
| 1924           | 3.7                          | 5.1                         |   |                 |                             |
| 1925           | 6.8                          | 8.9                         |   |                 |                             |
| 1926           | 4.8                          | 5.9                         |   |                 |                             |
| 1927           | 5.3                          | 6.6                         |   |                 |                             |
| 1928           | 4.6                          | 5.6                         |   |                 |                             |
| 1929           | 6.3                          | 7.2                         | \$8.8                                   | \$8.3           | 10.0                        |
| 1930           | 2.8                          | 3.6                         | 5.8                                     | 5.3             | 7.7                         |
| 1931           | 2.8                          | 4.6                         | 5.4                                     | 3.7             | 6.8                         |
| 1932           | 1.5                          | 3.5                         | 2.6                                     | 0.9             | 2.3                         |
| 1933           | 0.5                          | 1.2                         | 2.1                                     | 0.9             | 2.1                         |
| 1934           | 1.3                          | 2.6                         | 3.3                                     | 2.0             | 4.0                         |
| 1935           | 4.6                          | 8.5                         | 4.1                                     | 2.5             | 4.5                         |
| 1936           | 8.3                          | 13.2                        | 6.1                                     | 3.8             | 5.9                         |
| 1937           | 7.3                          | 10.4                        | 6.7                                     | 6.7             | 9.4                         |
| 1938           | 3.7                          | 5.7                         | 4.4                                     | 3.9             | 6.1                         |
| Total, 1919-38 | 93.2                         | 7.0                         |   |                 |                             |
| 1939           |                              |                             | 6.0                                     | 5.6             | 7.9                         |
| 1940           |                              |                             | 7.3                                     | 6.8             | 8.8                         |
| 1941           |                              |                             | 14.2                                    | 14.3            | 14.8                        |
| 1942           |                              |                             | 28.6                                    | 29.1            | 23.8                        |
| 1943           |                              |                             | 33.3                                    | 33.9            | 22.7                        |
| 1944           |                              |                             | 38.9                                    | 37.5            | 23.3                        |
| 1945           |                              |                             | 33.1                                    | 30.6            | 19.0                        |
| Total, 1929-45 |                              |                             | 210.7                                   | 195.8           | 13.7                        |
| 1946           |                              |                             | 18.8                                    | c               | c                           |

<sup>a</sup> Kuznets, *National Income and Its Composition, 1919-1938*, p. 276, Table 39. For 1934 the minus sign in Kuznets' book is a misprint.

<sup>b</sup> *Survey of Current Business*, February, 1947, p. 7 (1945-46, for unadjusted figure); February, 1946, p. 8 (1941-44, and 1945 for adjusted figure); April, 1944, p. 14 (1939, 1940); May, 1942 (1929-38), p. 12.

<sup>c</sup> Not available.

on the product side. These revisions result in a new total for consumer expenditures, but the estimate for consumer incomes remains unchanged. Hence consumer saving is altered. The difference is not substantial enough, however, to justify omission of the old series, since no revision of this particular series has yet been published.

The Department of Commerce series of saving by individuals, unlike Kuznets' series, is not directly comparable with the Commerce series of national income, since the Department estimates show what consumers have saved from their "income payments," not their "income." The income payments include transfer payments: social security benefits paid, soldiers' bonus and war service pensions, direct relief, and allotments to dependents of military personnel; and they exclude employers' and employees' contributions to social security and pension funds. In all these respects they differ from national income; therefore, the Commerce series in the third column of Table 40 — "unadjusted" saving — cannot be expressed as a percentage of national income. Total saving will not equal total investment, in so far as saving is defined in terms of income payments rather than national income, unless the government's deficit (dissaving) is correspondingly recomputed.<sup>1</sup>

**20.** If the transfer payments are subtracted and the employer and employee contributions to social security funds are added to the figure that the Commerce Department presents as "Net savings of individuals," a figure is obtained that may be compared with, and computed as a percentage of, the Department national income total. This is called in Table 40 an "adjusted" amount of net saving of individuals.

Kuznets does, indeed, include direct-relief payments in the income of individuals. He thus includes it in national income, but removes it at another point by increasing the government's loss as an enterprise (Chapter 5, § 57). Hence Kuznets will tend to show a larger saving by individuals than even the adjusted Commerce figures in Table 40. But he shows a larger dissaving by government than the Department would show.

**21.** The technique of estimating a quantity as a residual is used more intensively in the Commerce and Kuznets series on saving by individuals than in any other. The last step in the Commerce series

<sup>1</sup> See Clark Warburton, "Accounting Methodology in the Measurement of National Income," *Studies in Income and Wealth*, I, 104-10.



has already been noted: saving by individuals is obtained by subtracting consumer purchases from disposable income, itself a residual of income payments minus personal taxes. But consumer purchases is itself a residual estimate, obtained from gross national product by subtracting direct estimates of government purchases, private gross capital formation, and increase in foreign balance. Thus, an estimate of individual saving is obtained by subtracting one residual from another. This affords an unusual chance for errors to accumulate, as well as to offset each other.

22. Estimates of saving by individuals have been made by the Securities and Exchange Commission for the years 1933-45. They are especially significant for comparison with the Kuznets and Commerce estimates because they are computed by an entirely different procedure. They are made, not from data on income and expenditure, but from data on changes in assets held by individuals and changes in their liabilities. Moreover, the concept of saving is more extensive than that of either Kuznets or the Commerce Department, since it includes estimated net increases in consumer holdings of consumer durables, not only houses, but also automobiles, furniture, and household machinery.<sup>1</sup> And the increase in the old-age reserve account and the unemployment trust fund, under the Social Security Act, is attributed to individual saving, not government saving.<sup>2</sup>

#### D. Total Saving

23. Estimates of total saving in the United States are given by Kuznets, but not in the Commerce data published in 1946. Approximations of net capital formation derived from Department data, given in Table 30 in Chapter 6, serve as very rough estimates of total saving.

Kuznets' estimates have already been presented, in Table 29 in Chapter 6 (§ 51), as "net capital formation." As computed by Kuznets, net capital formation is the same thing as net investment, and the total of net investment equals the total of saving, as explained earlier in this chapter (§§ 2-3).

<sup>1</sup> The technique of estimating and estimates for 1933-42 (preliminary staff estimates) are given by Hoffenberg, *op. cit.*, pp. 138-41; Table 4, p. 131. Estimates on a somewhat different basis for the years 1940 to date are available in quarterly releases of the Commission. For a 1940-42 comparison with Commerce Department data, see *Survey of Current Business*, March, 1943, p. 18, footnote 4. For a detailed description of the method used, see Goldsmith and Salant, *loc. cit.*, pp. 244-84.

<sup>2</sup> Goldsmith and Salant, *op. cit.*, p. 255, and discussion by Gerhard Colm and E. L. Dulles, *ibid.*, pp. 294-95, 300-301, and Goldsmith and Salant, *ibid.*, pp. 311-13.

The only other series on total saving in the United States is the one compiled by the staff of the Securities and Exchange Commission. Chiefly because of differences in concepts, and because the latter series does not remove inventory changes due to changes in prices, the two series cannot be compared without substantial adjustments. As they stand, the S.E.C. estimates of total saving are usually about \$2 billion to \$3 billion less than those of Kuznets, for the years they overlap.<sup>1</sup>

24. A review of the Kuznets data indicates that, for the two decades 1919-38, individuals, not corporations, were the ones that did the saving. His estimates show that individuals' savings were positive in every year of the great depression. The Commerce data, as of 1946,<sup>2</sup> likewise, show no dissaving by individuals in any year. This finding is all the more remarkable since "individuals" in both series includes unincorporated concerns, many of which experienced heavy losses. Annual savings of individuals including unincorporated firms fluctuated, according to Kuznets, in the \$2 billion to \$7 billion range in the nineteen-twenties, dropped to \$0.5 billion in 1933, and recovered to \$8 billion in 1936.

Kuznets also estimates the savings of individuals as such, distinct from the unincorporated enterprises they own. Their income includes the estimated amounts they withdraw for their own use from such concerns. In 1932, Kuznets estimates that savings of individuals, thus interpreted, was \$5 billion, almost as much as in 1929 (\$5.2 billion).<sup>3</sup>

Part of the explanation for the amounts of saving estimated for individuals in depression may lie in the exclusion from the national income data of capital gains and losses. Many individuals probably pay fairly close attention to their capital gains and losses, realized or even merely accrued, and regulate their spending, hence their saving, accordingly. Inclusion of such gains and losses would have increased the annual saving of individuals in the boom years by perhaps \$6 billion.<sup>4</sup> Likewise, subtraction of capital losses from individuals'

<sup>1</sup> Hoffenberg, *op. cit.*, p. 131, Table 4; and Goldsmith and Salant, *op. cit.*, p. 237, Table 1, and pp. 242-43.

<sup>2</sup> But see Appendix B below.

<sup>3</sup> Kuznets, *National Income and Its Composition, 1919-1938*, I, 276, Table 39. In the column of Kuznets' table headed "Savings of individuals and entrepreneurs," the figure, - 1.3, for 1934, is a misprint and should read + 1.3.

<sup>4</sup> Kuznets, *op. cit.*, I, 296, citing Maurice Leven's data (*America's Capacity to Consume*) for 1929. See also Clark Warburton, "IV: Treatment of Capital Gains in the Measurement of National Income," in his "Accounting Methodology in the Measurement of National Income," in *Studies in Income and Wealth*, I, 97-101.

incomes would almost surely have resulted in a negative figure for individuals' saving in 1930-33, and perhaps even in later years. Still, even under this reckoning, over the entire twenty-year period it would have been the individuals (and to a minor extent the government, under Kuznets' methods of computation), not the corporations, that would have done the saving.<sup>1</sup>

25. During World War II, individuals increased their saving greatly. The Department of Commerce data for "net savings of individuals," as adjusted in Table 40, rose to \$14 billion in 1941, \$29 billion in 1942, \$34 billion in 1943, and \$37 billion in 1944. The 1944 savings equaled 23 per cent of the national income. Meanwhile, corporations saved between \$4 billion and \$5 billion a year, and in addition were piling up \$1 billion to \$5 billion a year in preparation for the payment dates of increased taxes that were being charged off profits in the year of earnings, although not due to be paid until the next year.<sup>2</sup>

These large amounts of saving did not correspond to net capital formation, except in 1941, since this item was negative, or nearly so, depending partly on definitions used, during each of the war years 1942-44 (Chapter 6, Table 30). Rather, the large total of individual and corporate saving in 1942-44 corresponded to an item of roughly similar magnitude in the government's accounts: federal deficit (§ 10).<sup>3</sup>

## VII. DISTRIBUTION OF FAMILIES AND SINGLE PERSONS BY SIZE OF INCOME

26. The percentage of an individual's income that is saved varies substantially according to the amount of his income; and among individuals with the same amount of income, those in rural areas usually save a larger proportion.

Estimates of the distribution of individuals or families in the United States by amount of income have been made for the twelve months' period ending June 30, 1936, and for the calendar year 1941 and the

<sup>1</sup> For comments on the consumption-income relation shown by Kuznets' data, see Rollin F. Bennett, "Significance of International Transactions in National Income," *Studies in Income and Wealth*, VI, 149-64.

<sup>2</sup> *Survey of Current Business*, February, 1945. For a discussion of wartime consumer saving, see Milton Gilbert and George Jaszi, "National Income and National Product in 1942," *Survey of Current Business*, March, 1943, pp. 18-19.

<sup>3</sup> Milton Gilbert and George Jaszi, "National Income and National Product in 1943," *Survey of Current Business*, April, 1944, Table 6.

first quarter of 1942. Both of these estimates are based primarily on carefully designed sample surveys consisting of interviews in the home by field agents of the Bureau of Labor Statistics of the Department of Labor and the Bureau of Human Nutrition and Home Economics of the Department of Agriculture. Supplementary data were obtained from published sources, particularly *Statistics of Income*.

These are the only two estimates of this kind that have been made for the United States. Other compilations that have been published are either based on one of these two studies or are built up from scattered sample data that were not gathered with a view to compiling an over-all estimate.<sup>1</sup>

Data far richer in detail but much narrower in geographic scope have been supplied by three state-wide studies made in the nineteen-thirties. They cover Delaware for 1936-38, Minnesota for 1938-39, and Wisconsin for 1929 and 1934-36, including a sample of identical taxpayers for the years 1929-35. In addition to the volumes containing the basic tables, studies analyzing the data have begun to appear.<sup>2</sup>

27. The 1935-36 estimate, made by the National Resources Committee, is based primarily on interviews with 300,000 families. A family, as defined for this study, "consists of two or more persons living together as one economic unit, having a common or pooled income and living under a common roof."<sup>3</sup> For each income class above

<sup>1</sup> For a description of all the attempts that have been made to estimate the distribution of families and individuals in the United States by size of income, see C. L. Merwin, Jr., "American Studies of the Distribution of Wealth and Income by Size," *Studies in Income and Wealth*, III, 30-73. Activity in this field of research is growing rapidly. See the papers by Albert Gailord Hart and Julius Lieblein ("Family Income and the Income Tax Base"), Charles E. Noyes and Ernest R. Hilgard ("Estimated Income Distribution in Three Surveys of Consumer Requirements"), and Neal Potter and David Rosenblatt ("Method of Estimating the Distribution of Civilian Money Income in 1942"), in *Studies in Income and Wealth*, VIII; Horst Mendershausen, *Changes in Income Distribution During the Great Depression*; Dorothy S. Brady and Rose D. Friedman, "Savings and the Income Distribution," and William Vickrey, "Resource Distribution Patterns and the Classification of Families," *Studies in Income and Wealth*, X, pp. IV-1 — IV-14, and pp. IV-15 — IV-47 (mimeograph). For references to, and comments on, earlier work in this field in the United States, see Albert G. Hart, *How the National Income Is Divided*, University of Chicago Public Policy Pamphlet no. 23, 1937.

<sup>2</sup> Frank A. Hanna, Joseph Pechman, and Sidney Lerner, "Analysis of Wisconsin Income," *Studies in Income and Wealth*, IX (a foreword by Milton Friedman describes the scope of the state studies); Roy G. Blakey, William Weinfeld, James E. Dugan, and Alex L. Hart, *Analyses of Minnesota Incomes, 1938-39*.

<sup>3</sup> *Consumer Incomes in the United States*, p. 40. For a description of the types of families included and excluded in the sample for the income study, and for the sample in the consumer-purchases study (where the data on saving were obtained), see *Consumer Expenditures in the United States*, pp. 105-07. For a brief description of the income study, see Merwin, *op. cit.*, pp. 51-54, 67-73.

\$7500, the number of families was derived from federal income-tax data.<sup>1</sup> From these two sets of data estimates were made for the 29 million families of two or more persons. From a variety of sources, including some sample interviews, estimates were made for the 10 million single individuals living alone or as lodgers, and for the 2 million persons living in institutions and quasi-institutional groups (for example, the armed forces). The incomes of this last group are received, in whole or in part, as subsistence and care supplied by the institution.

Income was defined to include home-grown food and other farm products consumed by the family. It also included net imputed rental on owner-occupied homes (before subtracting depreciation, however), relief payments and other benefits, and gifts used for current living expenses. To this extent the total income shown tends to be more than the national income as computed by the Commerce Department. But since corporate saving is not included, it also tends to be less. The net result, due also to some other differences, is a total only slightly larger than the Commerce Department estimate of \$59.6 billion national income for the twelve months ending June 30, 1936. If allowance is made for the differences in concept, there is a discrepancy of about 5 per cent.<sup>2</sup>

Personal taxes — chiefly income, property, and poll taxes — were not deducted in computing income. Soldiers' bonus was not included in income.

**28.** The distribution of families and of single individuals may best be noted separately, since they are usually qualitatively different economic units. Table 41 reproduces the estimates of distribution of families, and Table 42 shows the distribution of single individuals.

The estimated amount of income saved by families at various income levels is based on information obtained from about 42,000 of the 300,000 families that reported their income.<sup>3</sup> These 42,000 families also reported the amounts they spent on food, housing, clothing, and so on — a phase of the survey not covered in the present volume. Saving and spending estimates were made for single persons also.

<sup>1</sup> See Enid Baird and Selma Fine, "The Use of Income Tax Data in the National Resources Committee Estimate of the Distribution of Income by Size," *Studies in Income and Wealth*, III.

<sup>2</sup> *Consumer Incomes in the United States*, pp. 34-35. See also Harold Barger, *Outlay and Income in the United States, 1921-1938*, pp. 362-65.

<sup>3</sup> *Consumer Expenditures in the United States*, pp. 107, 122.

TABLE 41

Distribution of Families and of Aggregate Income Received, by Income Level, United States, 1935-36<sup>a</sup>

| Income Level          | Families   |                           |                        | Aggregate Income         |                           |                        |
|-----------------------|------------|---------------------------|------------------------|--------------------------|---------------------------|------------------------|
|                       | Number     | Per Cent<br>of Each Level | Cumulative<br>Per Cent | Amount<br>(in Thousands) | Per Cent<br>at Each Level | Cumulative<br>Per Cent |
| Under \$250           | 1,162,890  | 3.95                      | 3.95                   | \$135,836                | 0.28                      | 0.28                   |
| \$250-\$500           | 3,015,394  | 10.26                     | 14.21                  | 1,166,509                | 2.45                      | 2.73                   |
| \$500-\$750           | 3,799,215  | 12.92                     | 27.13                  | 2,384,017                | 5.00                      | 7.73                   |
| \$750-\$1,000         | 4,277,048  | 14.55                     | 41.68                  | 3,738,014                | 7.84                      | 15.57                  |
| \$1,000-\$1,250       | 3,882,444  | 13.20                     | 54.88                  | 4,348,429                | 9.12                      | 24.69                  |
| \$1,250-\$1,500       | 2,865,472  | 9.75                      | 64.63                  | 3,907,765                | 8.20                      | 32.89                  |
| \$1,500-\$1,750       | 2,343,358  | 7.97                      | 72.60                  | 3,777,570                | 7.92                      | 40.81                  |
| \$1,750-\$2,000       | 1,897,037  | 6.45                      | 79.05                  | 3,468,803                | 7.27                      | 48.08                  |
| \$2,000-\$2,250       | 1,420,883  | 4.83                      | 83.88                  | 3,002,082                | 6.30                      | 54.38                  |
| \$2,250-\$2,500       | 1,043,977  | 3.55                      | 87.43                  | 2,471,672                | 5.18                      | 59.56                  |
| \$2,500-\$3,000       | 1,314,199  | 4.47                      | 91.90                  | 3,568,624                | 7.48                      | 67.04                  |
| \$3,000-\$3,500       | 743,559    | 2.53                      | 94.43                  | 2,385,993                | 5.00                      | 72.04                  |
| \$3,500-\$4,000       | 438,428    | 1.49                      | 95.92                  | 1,625,887                | 3.41                      | 75.45                  |
| \$4,000-\$4,500       | 249,948    | .85                       | 96.77                  | 1,048,368                | 2.20                      | 77.65                  |
| \$4,500-\$5,000       | 152,647    | .52                       | 97.29                  | 719,447                  | 1.51                      | 79.16                  |
| \$5,000-\$7,500       | 322,950    | 1.10                      | 98.39                  | 1,900,091                | 3.99                      | 83.15                  |
| \$7,500-\$10,000      | 187,060    | .64                       | 99.03                  | 1,605,632                | 3.37                      | 86.52                  |
| \$10,000-\$15,000     | 131,821    | .45                       | 99.48                  | 1,496,600                | 3.14                      | 89.66                  |
| \$15,000-\$20,000     | 58,487     | .20                       | 99.68                  | 1,013,664                | 2.13                      | 91.79                  |
| \$20,000-\$25,000     | 34,208     | .12                       | 99.80                  | 762,240                  | 1.60                      | 93.39                  |
| \$25,000-\$30,000     | 22,233     | .08                       | 99.88                  | 627,567                  | 1.32                      | 94.71                  |
| \$30,000-\$40,000     | 15,561     | .05                       | 99.93                  | 560,390                  | 1.18                      | 95.89                  |
| \$40,000-\$50,000     | 6,603      | .02                       | 99.95                  | 314,689                  | .66                       | 96.55                  |
| \$50,000-\$100,000    | 10,571     | .04                       | 99.99                  | 755,017                  | 1.58                      | 98.13                  |
| \$100,000-\$250,000   | 3,336      | .01                       | 100.00                 | 440,554                  | .92                       | 99.05                  |
| \$250,000-\$500,000   | 699        | b                         | ..                     | 200,174                  | .42                       | 99.47                  |
| \$500,000-\$1,000,000 | 197        | b                         | ..                     | 110,954                  | .23                       | 99.70                  |
| \$1,000,000 and over  | 75         | b                         | .                      | 142,650                  | .30                       | 100.00                 |
| All levels            | 29,400,300 | 100.00                    | .                      | \$47,679,238             | 100.00                    | ..                     |

<sup>a</sup> Consumer Incomes in the United States, August, 1938, p. 18, Table 3.<sup>b</sup> Less than 0.005 per cent.

TABLE 42

Distribution of Single Individuals and of Aggregate Income Received, by Income Level, United States, 1935-36<sup>a</sup>

| Income Level          | Single Individuals |                           |                        | Aggregate Income         |                           |                        |
|-----------------------|--------------------|---------------------------|------------------------|--------------------------|---------------------------|------------------------|
|                       | Number             | Per Cent<br>at Each Level | Cumulative<br>Per Cent | Amount<br>(in Thousands) | Per Cent<br>at Each Level | Cumulative<br>Per Cent |
| Under \$250           | 960,644            | 9.55                      | 9.55                   | \$158,302                | 1.37                      | 1.37                   |
| \$250-\$500           | 1,571,983          | 15.63                     | 25.18                  | 600,854                  | 5.19                      | 6.56                   |
| \$500-\$750           | 1,972,745          | 19.62                     | 44.80                  | 1,231,636                | 10.63                     | 17.19                  |
| \$750-\$1,000         | 1,599,030          | 15.91                     | 60.71                  | 1,391,492                | 12.01                     | 29.20                  |
| \$1,000-\$1,250       | 1,108,551          | 11.02                     | 71.73                  | 1,240,682                | 10.71                     | 39.91                  |
| \$1,250-\$1,500       | 877,956            | 8.73                      | 80.46                  | 1,201,347                | 10.37                     | 50.28                  |
| \$1,500-\$1,750       | 546,546            | 5.43                      | 85.89                  | 883,223                  | 7.63                      | 57.91                  |
| \$1,750-\$2,000       | 398,985            | 3.97                      | 89.86                  | 745,400                  | 6.44                      | 64.35                  |
| \$2,000-\$2,250       | 283,652            | 2.82                      | 92.68                  | 600,779                  | 5.19                      | 69.54                  |
| \$2,250-\$2,500       | 210,099            | 2.09                      | 94.77                  | 497,260                  | 4.29                      | 73.83                  |
| \$2,500-\$3,000       | 161,275            | 1.60                      | 96.37                  | 436,150                  | 3.77                      | 77.60                  |
| \$3,000-\$3,500       | 108,360            | 1.08                      | 97.45                  | 349,494                  | 3.02                      | 80.62                  |
| \$3,500-\$4,000       | 63,731             | .63                       | 98.08                  | 237,497                  | 2.05                      | 82.67                  |
| \$4,000-\$4,500       | 36,105             | .36                       | 98.44                  | 154,458                  | 1.33                      | 84.00                  |
| \$4,500-\$5,000       | 25,491             | .25                       | 98.69                  | 122,319                  | 1.06                      | 85.06                  |
| \$5,000-\$7,500       | 57,316             | .57                       | 99.26                  | 344,315                  | 2.97                      | 88.03                  |
| \$7,500-\$10,000      | 28,582             | .28                       | 99.54                  | 242,188                  | 2.09                      | 90.12                  |
| \$10,000-\$15,000     | 20,861             | .21                       | 99.75                  | 250,325                  | 2.16                      | 92.28                  |
| \$15,000-\$20,000     | 9,436              | .09                       | 99.84                  | 160,910                  | 1.39                      | 93.67                  |
| \$20,000-\$25,000     | 5,617              | .06                       | 99.90                  | 126,874                  | 1.10                      | 94.77                  |
| \$25,000-\$30,000     | 3,350              | .03                       | 99.93                  | 92,701                   | .80                       | 95.57                  |
| \$30,000-\$40,000     | 2,398              | .02                       | 99.95                  | 80,882                   | .70                       | 96.27                  |
| \$40,000-\$50,000     | 1,737              | .02                       | 99.97                  | 75,622                   | .65                       | 96.92                  |
| \$50,000-\$100,000    | 2,470              | .02                       | 99.99                  | 153,468                  | 1.33                      | 98.25                  |
| \$100,000-\$250,000   | 808                | .01                       | 100.00                 | 98,452                   | .85                       | 99.10                  |
| \$250,000-\$500,000   | 217                | b                         | ..                     | 64,324                   | .56                       | 99.66                  |
| \$500,000-\$1,000,000 | 43                 | b                         | ..                     | 23,849                   | .21                       | 99.87                  |
| \$1,000,000 and over  | 12                 | b                         | ..                     | 14,587                   | .13                       | 100.00                 |
| All Levels            | 10,058,000         | 100.00                    | ..                     | \$11,579,390             | 100.00                    | ..                     |

<sup>a</sup> Consumer Incomes in the United States, August, 1938, p. 30, Table 15.<sup>b</sup> Less than 0.005 per cent.

Each family's income was divided into three parts: amounts spent on personal consumption, paid in personal taxes, and saved. Consumption expenditures included the imputed rental of home-owners and the food and other products grown and consumed by rural or farm families, which were included in computing income.

29. Table 43 shows the amount saved in each income class of families. Of the \$42.9 billion income not saved, only \$2 billion went to gifts and personal taxes; the other \$40.8 billion was spent on current personal consumption.

The ten million single individuals are estimated to have saved \$1.2 billion out of their \$11.6 billion income.<sup>1</sup>

The estimates of saving for the highest income group and the lowest income group are much less dependable than the others. The number of interviews with persons of incomes over \$20,000 was extremely small — fourteen, in fact <sup>2</sup> — and reliance was placed largely on extrapolations based on data for the lower income groups.<sup>3</sup> In the lowest income group (under \$500), the number in the sample was

TABLE 43  
Amount Saved by Families in Various Income Classes, United States, 1935-36 <sup>a</sup>

| Income Class      | Number of Families<br>(millions) | Aggregate Income<br>(billions of dollars) | Savings<br>(billions of dollars) |
|-------------------|----------------------------------|---|----------------------------------|
| Under \$500       | 4.2                              | \$1.3                                     | \$-0.68                          |
| \$500-\$750       | 3.8                              | 2.4                                       | -0.35                            |
| \$750-\$1,000     | 4.3                              | 3.7                                       | -0.25                            |
| \$1,000-\$1,250   | 3.9                              | 4.3                                       | -0.12                            |
| \$1,250-\$1,500   | 2.9                              | 3.9                                       | 0.04                             |
| \$1,500-\$1,750   | 2.3                              | 3.8                                       | 0.13                             |
| \$1,750-\$2,000   | 1.9                              | 3.5                                       | 0.17                             |
| \$2,000-\$2,500   | 2.5                              | 5.5                                       | 0.45                             |
| \$2,500-\$3,000   | 1.3                              | 3.6                                       | 0.41                             |
| \$3,000-\$4,000   | 1.2                              | 4.0                                       | 0.63                             |
| \$4,000-\$5,000   | 0.4                              | 1.8                                       | 0.36                             |
| \$5,000-\$10,000  | 0.5                              | 3.5                                       | 1.03                             |
| \$10,000-\$15,000 | 0.13                             | 1.5                                       | 0.58                             |
| \$15,000-\$20,000 | 0.06                             | 1.0                                       | 0.41                             |
| \$20,000 and over | 0.09                             | 3.9                                       | 1.98                             |
| Total             | 29.4                             | 47.7                                      | 4.81                             |

<sup>a</sup> *Consumer Expenditures in the United States*, p. 86, Table 24-A.

<sup>1</sup> *Ibid.*, p. 88, Table 28 A.

<sup>2</sup> *Ibid.*, p. 122, Table 1 B.

<sup>3</sup> *Ibid.*, p. 136.



rather small (712, of which 512 were on farms), and in most of the urban units no information at all was obtained from families with income under \$500. The assumption was made that the average saving by families in the \$250 to \$500 class was \$250 less than the average saving by families in the \$500 to \$750 class, and that the average saving by families in the under-\$250 class was \$500 less. In effect, it was assumed that the difference in income made no difference in total consumption expenditure.<sup>1</sup> This assumption, based on the examination of what few data were available for low-income families, accounts for the large amount of dissaving recorded in Table 43 for the under-\$500 group.

**30.** In drawing conclusions from the data on distribution of families by income classes and distribution of amount saved by income classes, some qualifications must be kept in mind.

The income classes are according to incomes before deducting personal taxes. In 1935-36, deducting personal taxes would have moved few families into a lower range, since the federal income tax, the chief personal tax, was being levied at comparatively low rates. But for a present-day distribution the difference would be substantial.<sup>2</sup>

The tables show nothing about the wealth of the income recipients. Some of those with incomes under \$500 were doubtless living off their capital. At 3 per cent interest, a \$500 income implies a capital of \$16,667. Retired persons living on annuities also may account for a part of this under-\$500 group.<sup>3</sup>

Owing to inadequate records of tax-exempt income received by wealthy persons (interest on state and local bonds is exempt from federal income tax), the amount of income in the over-\$20,000 group may be somewhat understated.

Some of the families in a low-income group are there for that particular year only, or only for an occasional year. An individual busi-

<sup>1</sup> *Ibid.*, p. 134.

<sup>2</sup> D. G. Champenowne presents a distribution of individuals in Great Britain according to net income after taxes, for 1938-39 and 1944-45. The change in distribution is striking. "The National Income and Expenditure of the United Kingdom, 1938-1945," *Bulletin of the Oxford University Institute of Statistics*, May, 1946, p. 137. In the study prepared by Dorothy S. Brady, from a survey conducted by the United States Department of Labor, "Expenditures and Savings of City Families in 1944," *Monthly Labor Review*, January, 1946, the data are tabulated by income after personal taxes.

<sup>3</sup> On some aspects of the relation between wealth and income, see the articles, "A National Survey of Liquid Assets," in *Federal Reserve Bulletin*, by Henry H. Villard (June, 1946, and July, 1946) and Duncan McC. Holthausen (August, 1946) based on studies conducted by George Katonah and Eleanor Maccoby of the Division of Program Surveys, United States Department of Agriculture.

nessman suffering a loss for the year is presumably in that group. Likewise, a year of good commissions or back-dividend payments or large partnership or proprietorship profits may put a family temporarily in one of the high-income groups. These "transients" almost surely tend to spend more (in the low-income group) and save more (in the high-income group) than the permanent occupants of those groups. They thus tend to exaggerate the volume of dissaving in the low-income group and the volume of saving in the high-income group.<sup>1</sup>

The fact that dissaving is shown for the income group \$500 to \$750, for example, conceals the fact that many of the families within that group had positive savings. Similarly, some families presumably dissaved, although within an income group that in the aggregate showed positive savings. Some families, staying within a given income group, may even save and dissave in various years in a roughly recurring pattern.

**31.** The only other nation-wide estimate of distribution of families and single persons by size of income that has been made through a carefully designed sample study, in the United States or abroad, so far as the present writer is aware, is for the year 1941 and the first three months of 1942, by the Department of Labor (Bureau of Labor Statistics) and the Department of Agriculture (Bureau of Human Nutrition and Home Economics).<sup>2</sup> Table 44 shows the number of families and single consumers in each income class in 1941 if income is defined to include non-money income, chiefly imputed rent on owner-occupied homes, and food grown by the consumer or received as payment in kind.

Table 45 shows per-family estimates of receipts, disbursements, and saving or dissaving for each of six total-income classes, 1941.

Exact comparison with the results of the 1935-36 study are not possible, owing chiefly to the inclusion in the later study of more elements of income in kind, but a general comparison is valid.<sup>3</sup> It reflects, of course, the large increase in national income, both in real and dollar terms, that occurred between the two periods.<sup>4</sup>

<sup>1</sup> See these and other considerations as analyzed by William Vickrey in "Resource Distribution Patterns and the Classification of Families," *Studies in Income and Wealth*, X, pp. IV-15 — IV-47 (mimeograph).

<sup>2</sup> Published in *Family Spending and Saving in Wartime*, Bulletin 822, Department of Labor, 1945.

<sup>3</sup> *Ibid.*, pp. 199-200.

<sup>4</sup> For discussion of some of the topics covered in this chapter, see Gottfried Haberler, "II: National Income and its Components as Instruments of Economic Analysis . . ." pp. 147-66, 186-88, and the discussion by M. A. Copeland, pp. 167-72, and Hans Neisser, pp. 172-81, in Haberler's "National Income, Saving, and Investment," *Studies in Income and Wealth*, II, 139-88.

TABLE 44

# Distribution of All Families and Single Consumers, by Annual Total Income, Money and Non-Money, United States, 1941<sup>a</sup>

(in thousands)

| Type of Community                     | All Families<br>and Single<br>Consumers | Annual Total Income Class |                |                        |                          |                          |                          |                          |                          |                        |
|---------------------------------------|---|---------------------------|----------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------|
|                                       |   | Negative<br>Income        | Under<br>\$500 | \$500<br>to<br>\$1,000 | \$1,000<br>to<br>\$1,500 | \$1,500<br>to<br>\$2,000 | \$2,000<br>to<br>\$2,500 | \$2,500<br>to<br>\$3,000 | \$3,000<br>to<br>\$5,000 | \$5,000<br>and<br>Over |
| All types:<br>Number<br>Per cent      | 39,287<br>100.0                         | 50<br>0.1                 | 2,999<br>7.6   | 7,007<br>17.8          | 6,729<br>17.2            | 6,433<br>16.4            | 4,851<br>12.3            | 3,860<br>9.8             | 5,488<br>14.0            | 1,870<br>4.8           |
|                                       |   | 0<br>0                    | 1,223<br>5.0   | 3,327<br>13.6          | 3,547<br>14.5            | 4,061<br>16.6            | 3,425<br>14.0            | 2,936<br>12.0            | 4,403<br>18.0            | 1,541<br>6.3           |
| Urban:<br>Number<br>Per cent          | 24,463<br>100.0                         | 0<br>0                    | 1,223<br>5.0   | 3,327<br>13.6          | 3,547<br>14.5            | 4,061<br>16.6            | 3,425<br>14.0            | 2,936<br>12.0            | 4,403<br>18.0            | 1,541<br>6.3           |
|                                       |   | 0<br>0                    | 1,151<br>13.6  | 2,036<br>24.1          | 1,830<br>21.6            | 1,280<br>15.1            | 867<br>10.2              | 541<br>6.4               | 610<br>7.2               | 154<br>1.8             |
| Rural non-farm:<br>Number<br>Per cent | 8,469<br>100.0                          | 0<br>0                    | 1,151<br>13.6  | 2,036<br>24.1          | 1,830<br>21.6            | 1,280<br>15.1            | 867<br>10.2              | 541<br>6.4               | 610<br>7.2               | 154<br>1.8             |
|                                       |   | 0<br>0                    | 1,151<br>13.6  | 2,036<br>24.1          | 1,830<br>21.6            | 1,280<br>15.1            | 867<br>10.2              | 541<br>6.4               | 610<br>7.2               | 154<br>1.8             |
| Rural farm:<br>Number<br>Per cent     | 6,355<br>100.0                          | 50<br>0.8                 | 625<br>9.8     | 1,644<br>25.8          | 1,352<br>21.3            | 1,092<br>17.2            | 559<br>8.8               | 383<br>6.0               | 475<br>7.5               | 175<br>2.8             |
|                                       |   | 50<br>0.8                 | 625<br>9.8     | 1,644<br>25.8          | 1,352<br>21.3            | 1,092<br>17.2            | 559<br>8.8               | 383<br>6.0               | 475<br>7.5               | 175<br>2.8             |

<sup>a</sup> Family Spending and Saving in Wartime, Bulletin No. 822, p. 91, Table 14.

TABLE 45

**Average Money and Non-Money Receipts and Disbursements, Families and Single Consumers, by Annual Total Income Classes, Money and Non-Money, United States, 1941<sup>a</sup>**

|   | Annual Total Income Class |                        |                          |                          |                          |                          |
|---|---------------------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|   | Under<br>\$500            | \$500<br>to<br>\$1,000 | \$1,000<br>to<br>\$1,500 | \$1,500<br>to<br>\$2,000 | \$2,000<br>to<br>\$3,000 | \$3,000<br>to<br>\$5,000 |
| Receipts: Total income  | \$357                     | \$747                  | \$1,245                  | \$1,746                  | \$2,459                  | \$3,684                  |
| Inheritances, etc.  | 8                         | 11                     | 12                       | 14                       | 21                       | 26                       |
| Total receipts  | 365                       | 758                    | 1,257                    | 1,760                    | 2,480                    | 3,710                    |
| Disbursements: Current consumption                                | 482                       | 791                    | 1,209                    | 1,656                    | 2,234                    | 3,146                    |
| Gifts and contributions   | 11                        | 22                     | 36                       | 59                       | 85                       | 154                      |
| Personal tax payments   | b                         | 1                      | 3                        | 3                        | 9                        | 26                       |
| Total disbursements   | 493                       | 814                    | 1,248                    | 1,718                    | 2,328                    | 3,326                    |
| Net deficit (dissaving) <sup>c</sup>                              | 127                       | 54                     | 0                        | 0                        | 0                        | 0                        |
| Net surplus (saving)  | 0                         | 0                      | 15                       | 46                       | 153                      | 399                      |
| Percentage of families and single consumers reporting net deficit | 47                        | 39                     | 39                       | 34                       | 30                       | 21                       |
| Percentage reporting net surplus                                  | 27                        | 47                     | 58                       | 65                       | 70                       | 79                       |

<sup>a</sup> *Family Spending and Saving in Wartime*, Bulletin No. 822, p. 92, Table 16.

<sup>b</sup> Less than 50 cents.

<sup>c</sup> The deficits and surpluses were obtained by adding changes in assets and liabilities reported by the families, and there is a slight discrepancy in some of the columns between the net change and the receipts-disbursements totals.

# 9

## *National Income Produced in the Several Industries*

1. An industrial division of the economy is based on type of commodity or service produced. On this basis agriculture, manufacturing, wholesaling, and other divisions are distinguished.

The economy may first of all be divided into two great industries: government and private enterprise. The government product is distinguished not by its physical nature, but by being distributed free of charge or at a charge not determined by the aim of at least covering costs.

If adequate data were available on the imputed income of housewives (Chapter 5, § 4), a third great industrial sector would be the home. Home product is distinguished by being produced under customary or agreed-upon rules of work, not under the incentive of money reward.

### I. GOVERNMENT AND PRIVATE ENTERPRISE

2. The relative economic importance of the government and private segments of the economy may be expressed in several different ways, according to the meaning given to "economic importance."

The hypothetical illustrations of the six-man economy employed in Chapter 7 greatly oversimplified the government's rôle in the economy. The government spent all its money on labor and in interest on borrowed funds. Consequently, it directly supervised the

production of all the goods and services that it dispensed. In real life the government, like a private-enterprise concern, spends much of its money purchasing products that have been produced elsewhere. The end product or final service that it distributes free of charge is only in part a result of the labor and capital employed under its supervision. The government is both a producer and a dispenser of goods and services, and it dispenses much more than it produces.

Police protection in a city illustrates the distinction. The dispensing of this protection among the various inhabitants and properties is carried out entirely by the city. The production of the service, however, is carried out partly by private enterprise. The productive service represented by the effort exerted and the time spent by the policeman is indeed produced by the city government. City officials hire the policeman, set his conditions of work, and may discharge him, under general rules adopted by the voters. But with respect to the patrol car that he uses, which likewise contributes to the final product (police protection), the city authorities are only middlemen. The labor and capital that produces the patrol car are guided and paid for by business firms operating under private enterprise. The city officials buy the finished car from private enterprise and, combining it with the policeman's services, dispense the end product, police protection, among the individuals in the community. And if part of the police protection is a service to business, rather than a true end product (consumers' service), then the end product turned out by the business has been in part produced by the government, as reflected by part of the policeman's wages.

Consequently, the economic influence of government and private enterprise may be compared in at least two different meanings. One approach is to compare the amounts dispensed under the auspices of each. The other is to compare the amounts of production carried on by each; that is, the value added by government compared to the value added by private enterprise.

3. No data are presented here on the relative rôle of government under the "dispensing" test, but Table 46 shows the rôle of the government as a producer, under the value-added test. A statement of the proportion of end products and services dispensed by government must await a segregation of government services to consumers from all other government services.

If war expenditures are assumed to yield final products (contrary

to the position taken in Chapter 7, § 52), it is obvious that in wartime the rôle of the government as a dispenser of final products increases enormously. In contrast, its rôle as a producer does not increase to a similar degree, at least in the United States. In World War II more than half the final product of the United States economy, defined to include munitions, service by members of the armed forces, and other war goods and services, was used up or dispensed by the government. But the proportion of the economy's total output produced by government rose only from 12 per cent of the national income in 1940 to 21 per cent in 1945. Government arsenals expanded, but privately owned and operated munitions plants expanded also. Millions were drawn into the armed forces, but millions of unemployed, housewives, students, and retired workers were drawn into employment with private firms.

4. There is still a third way of computing the proportions of government and private-enterprise segments of the economy. When the government makes money payments to a family for home relief, it is neither producing nor dispensing a final commodity or service. It is, however, dispensing a command over goods and services. To that extent it is controlling or influencing the amount and kind of economic activity.

5. The type of question to which an answer is being sought will determine the method of computation as well as the degree of refinement in measurement. The following problems are illustrative but, of course, do not exhaust the possibilities.

The discussion may be of the economic freedom of the worker and the investor — freedom not only to move from one activity or one locality to another, but also freedom to act collectively, power to enforce demands in rate of remuneration, conditions under which the labor or capital is employed, and so on. Here the relevant measure is production, not the amount of product dispensed.

The analysis may concern the adequacy of the money incentives that the economic system offers to put at risk either money capital or expensively acquired labor skill in enterprises with uncertain prospects, where the penalty for erroneous prediction is a substantial decline in money income or even a net loss of wealth. Here, too, so far as a distinction may be drawn on these grounds between government activity and business activity, it is usually the producing proportions, not the dispensing proportions, that are relevant.

But the issue may instead be, who decides how the economic resources of the community shall be allocated among the various possible ends — how much bread shall be produced compared to how much transportation service, and how much police protection? Then the proportion of final products dispensed by the government is the relevant ratio. The degree to which a community is dedicating its efforts to a war will be described more intelligibly in terms of this ratio than the other two.

In discussing the powers of government to prevent mass unemployment and sharply declining prices on the one hand, and its ability to prevent a sharp rise in prices on the other, the third measure is usually the most relevant: the value of commodities and services dispensed or used by the government plus the transfer payments that it makes, like home relief, compared with the value of the commodities and services dispensed to others than the government through the system of private enterprise. By changing either its transfer payments or its purchases or its production of goods and services, the government influences the general level of prices and employment.

6. The total output of private enterprise is usually broken down according to the net value added by each major industry — the mining industry, the manufacturing industry, the trade industry, and so on. The government, on the contrary, is usually considered to be but one industry, like manufacturing or trade.

Conceivably, however, government production could be broken down into sub-industries, or stages, using the value-added technique. General-purpose production, the rendering of services by legislators, for instance, might be comparable to the extraction of raw materials in private industry. Manufacturing is carried on in government arsenals. Storage and distribution of the product, comparable to some of the functions performed by retail and wholesale trades, are accomplished in the stationing and maintenance of the ships of the navy. That no computations based on such a classification have ever been made is doubtless due to the difficulties arising from the fact that the government produces services, not commodities. The manufacturing and distributive activities are fused into one stage, just as they are in private-enterprise production of services. The lack of any purchase and sale of the government product even at earlier stages adds to the difficulties of measurement. The legislature does not bill the navy and the police department for its services. A



government is a vertically integrated concern, except for the few cases where a central government sells services to a state (or provincial) or municipal government.

7. Government production might also be measured by kinds of finished product. The classification could be of the usual type: police protection, fire protection, judiciary, and so on. Or it could be in terms of services to consumers, services to business, and services to the economy generally. In fact, there are no data at all on government production broken down by either of these classifications. There are, to be sure, computations available on the cost of police protection, the cost of education, and so on, but they reflect something different from what is under discussion here. The cost-of-education data include not only the salaries of the teachers, which represent actual production by the government, but also the purchases of books, paper, fuel, and other supplies, which have been produced by private enterprise. With respect to this part of its expenditures, government is acting merely as a dispensing agent (§ 2). Hence the total government expenditure on education, for example, reflects something more than the amount of education produced directly by the government. It also tends to reflect something less, since, as implied in § 6, the data do not include any charge for government overhead that might be reasonably attributed to education—for example, the time and effort spent by legislators in formulating and watching the progress of the educational program. (See Chapter 6, §§ 27–30, for available data on government product.)

## II. FACTOR PAYMENTS CLASSIFIED BY INDUSTRY

8. The estimates of type of factor payments—total wages and salaries, total net rent, total interest, total profit—are each built up by data from each of the several industries. The total wages paid in the manufacturing industry are added to those paid in retail trade, and so on. Indeed, the basic building block of national income statistics on the factor-payment side is a still smaller industrial subdivision, the electrical machinery industry, for example. The salaries and wages paid in that industry represent a “cell”—an “industry type-of-income cell”—so called because the amount is shown in a cell in a cross-tabulation:

Factor Payments

| Industry             | Wages and Salaries | ... |
|----------------------|--------------------|-----|
| Electrical machinery | \$000,000          | ... |

It is therefore evident, even apart from the intrinsic interest of the end product, why the computers of national income have spent much time and effort in a critical examination of the industrial classifications of *Statistics of Income*, the *Census of Manufactures*, and other sources.<sup>1</sup>

The amount of national income attributed to each of the various industries within the private sector corresponds fairly closely, in principle, to what the *Census of Manufactures* calls "value added" by the industry. The value added by an industry is computed by deducting from the value of its products (excluding construction, repair, and maintenance work on force account (Chapter 6, § 29)), the cost of materials, fuel, and electrical energy purchased from other concerns. This "value-added" figure tends to be larger than the national income created by the industry, since it is computed without deducting depreciation, services purchased from other concerns, taxes, and some other minor items.<sup>2</sup>

All data on income produced by the several industries must be taken with reserve, especially if the classification is detailed. The difficulties of classification are numerous and substantial.<sup>3</sup> A real appreciation of the problem cannot be obtained without following Kuznets and the Commerce Department computations through their long explanations of how each of the major industry classifications was constructed.<sup>4</sup>

9. With respect to employee income and the profits of unincorporated concerns, Kuznets found it impossible to make direct estimates for a few industries. These industries were combined in a "miscellaneous" group, and estimates were made indirectly. For em-

<sup>1</sup> See Kuznets, *National Income and Its Composition, 1919-1938*, I, chap. 3, and II, 475 ff., and Edward F. Denison, "Revised Estimates of Wages and Salaries in the National Income, 1929-43," *Survey of Current Business*, June, 1945, p. 18, Table 1.

<sup>2</sup> Solomon Fabricant, *The Output of Manufacturing Industries, 1899-1937*, pp. 346-49.

<sup>3</sup> See Kuznets, *op. cit.*, chaps. 5 and 8.

<sup>4</sup> Kuznets, *op. cit.*, II, chap. 8; United States Department of Commerce, *National Income in the United States, 1929-35*, chaps. V-XVI.

ployee income, a "controlling total" was devised. A controlling total is the total of some attribute (for example, number employed) other than the one being measured (for example, wages and salaries), by which the area of partial coverage of the latter attribute can be compared with the total area it is desired to cover.<sup>1</sup> For employee income, the controlling total consisted of the number of employable persons; that is, the labor force ("gainfully occupied"). The number of fully unemployed was subtracted, and from the balance there was subtracted the number employed in all the industries for which direct estimates had been made. The remainder, the number employed in the miscellaneous group, when adjusted for part-time employment and multiplied by an estimated full-time average wage rate derived from somewhat similar industries, gave the employee income in the miscellaneous industry group. This amount, added to the direct estimates of employee income in the other industry groups, gave the total of the employee-income part of the national income.

For entrepreneurial income the number of entrepreneurs in the miscellaneous industry group was estimated directly and multiplied by an estimated average net income per entrepreneur.

For net rent, interest, dividends, and corporate net saving, no nation-wide controlling totals could be devised. Direct estimates for the industries in the "miscellaneous" group were made in each case (except rent, which is an industry group by itself).

Except for agriculture, transportation and other public utilities, and government, the estimates of interest, dividends, and corporate saving are taken from *Statistics of Income*, compiled from federal income-tax returns. The reporting unit for corporate-tax purposes is the firm, not the factory or warehouse or shop or other establishment. One firm often includes a number of establishments in two or more lines of business (industries). For example, many manufacturing concerns maintain their own sales forces, thus being engaged in both manufacturing and trade. Many firms are vertically integrated through several stages; mining, manufacturing, transportation, and distribution. Others are horizontally integrated to produce a wide variety of products. In *Statistics of Income* the whole firm is classified under the industry accounting for the greatest amount of the firm's

<sup>1</sup> Kuznets uses the term "controlling total" for the rent estimate, but apparently in a somewhat different meaning from that noted immediately above. For a detailed discussion, see Kuznets, *op. cit.*, I, 112-15.

receipts. Moreover, in varying degree in different years, "consolidated returns" were filed, each return representing a group of firms affiliated through inter-company stock-ownership, thus still further obscuring the industrial divisions of the data.

**10.** As to profits, dividends, and interest, it will be recalled (Chapter 5, §§ 23, 47) that the national income total can include only dividends and interest received by individuals; otherwise, they would be counted twice — once as such, and again in the item "profit" of the receiving firm. But there are no data showing how much of a given concern's dividend payments or interest payments goes to individuals and how much to business firms.

The procedure followed by both Kuznets and the Commerce Department succeeds in estimating the total of dividends and of interest paid to individuals. But this estimate of totals is arrived at by combining items that do not show the flow to individuals, these items being the "net dividends paid" and the "net interest paid" by corporations. This procedure, as will be seen, is the correct one for a statement of the amount of national income produced by each industry.

**11.** Dividends received by the corporations in a given industry are subtracted from their profits (which, as shown on the tax return, include such dividends) and also from the dividends paid by these corporations. Hence the profits shown in the industry are the profits originating there, excluding profits transferred to a corporation by dividends from other corporations. Likewise, the dividends paid by an industry are reported in national income statistics in a "netted-out" form, reflecting only dividends "originating in" the industry. But none, or a part, or all of these "net" dividends paid may be paid to other business firms rather than to individuals. The industrial classification does not show, and is not intended to show, the amount of dividends paid to individuals by a given industry.

**12.** As to interest received and paid, the principle followed by both Kuznets and the Commerce Department is the same as for dividends received and paid. Lack of data, however, has made necessary several assumptions and short cuts. For any one industrial group of corporations, long-term debt interest and short-term debt interest are treated separately. All interest on short-term debt paid by corporations other than those representing "aggregations of individuals" (chiefly savings banks and insurance companies — see Chapter 5, §§ 25, 61) is as-

sumed to be paid to other business firms (chiefly commercial banks), not to individuals. The interest paid on long-term debts is estimated from balance-sheet data in *Statistics of Income*. From this interest paid there is subtracted interest received on long-term debts. Until the Commerce Department issues its revised series (presumably in 1947), this interest received must be assumed to consist entirely of interest on government bonds. Interest paid out minus interest received is termed "net interest paid" by the industrial group of corporations, and hence interest originating in that industry. This net interest paid then also goes to build up the nation-wide total of interest received by individuals. As with net dividends paid, net interest paid by any one industrial group of corporations does not show interest paid by this particular group to individuals.

The treatment of interest on short-term debts, and its implications for an industry-by-industry classification, are given in Chapter 5, § 25.

13. Interest received is not subtracted in computing the net profit of the receiving corporations, in contrast to dividends received. It has already diminished the profits of the paying concern (in contrast to dividends). Or, if the paying concern is the government, no "profit" item exists there to be affected (in Commerce Department computations).

Consequently, the amount of profit attributed to a particular industry will depend on whether a corporation in that industry owns bonds of corporations in other industries, or, instead, stocks. If it holds bonds, the profits (but not the national income) of its industry will be larger, and the profits of some other industry, smaller. The implications may be summarized by a hypothetical example in which a corporation in industry R receives a payment from a corporation in industry P — first, as interest; second, as dividends. In both cases, P earns \$100 operating income, and pays it all out to R, which passes it all on to its stockholders in dividends.

|  | P Pays<br>interest | P Pays<br>dividends |
|--|--------------------|---------------------|
| Industry P:  |                    |                     |
| 1. Profit  | 0                  | 100                 |
| 2. Net dividends paid  | 0                  | 100                 |
| 3. Corporate saving  | 0                  | 0                   |
| 4. Net interest paid (interest paid<br>less interest received) | 100                | 0                   |

|  | P Pays<br>interest | P Pays<br>dividends |
|--|--------------------|---------------------|
| Industry R:  |                    |                     |
| 5. Profit  | 100                | 0                   |
| 6. Net dividends paid  | 100                | 0                   |
| 7. Corporate saving  | 0                  | 0                   |
| 8. Net interest paid (interest paid<br>less interest received) | - 100              | 0                   |
| <hr/>  |                    |                     |
| National income attributed                                     |                    |                     |
| to P (1 + 4; or, 2 + 3 + 4)                                    | 100                | 100                 |
| to R (5 + 8; or, 6 + 7 + 8)                                    | 0                  | 0                   |

In either case, however, the national income attributed to industry P (or to industry R) is the same. The combined amount of profit and net interest paid remains unchanged for each industry.

As this illustration demonstrates, a concern or an industry may show a negative "net interest paid" (or a negative "net dividends paid"). Such an anomalous figure, of course, carries no meaning if considered apart from the technique explained above.

14. The technique described in §§ 10-13 applies only to corporations; unincorporated concerns, as distinguished from individuals, are ignored, owing to lack of data.<sup>1</sup> Consequently, interest and dividends received by unincorporated concerns appear in the national income total, as if they were received by individuals; and to the extent that they are reported again as an unspecified part of unincorporated profits, the national income is overstated. The error involved is presumably small. A counteracting error occurs in that not all interest paid by unincorporated concerns to individuals is recorded.<sup>2</sup> In recent years, the Department of Commerce has been able to lessen these inadequacies by using unpublished compilations made by the Treasury Department from partnership returns.

15. Table 46 shows the percentages of national income attributed to each of eleven industry groups, for 1929, 1932, 1940, and 1943, as derived from the Commerce Department data. Table 47, from Kuznets, selects 1921 and 1938, with a ten-industry breakdown. Since Tables 46 and 47 do not break down the data according to type

<sup>1</sup> United States Department of Commerce, *National Income in the United States, 1929-35*, p. 54; Kuznets, *op. cit.*, II, 407.

<sup>2</sup> Kuznets, *National Income and Its Composition, 1919-1938*, I, 115.

TABLE 46

National Income, Percentages by Industrial Divisions, United States, Selected Years (Commerce)<sup>a</sup>

|                              | 1929 | 1932 | 1940 | 1943 |
|------------------------------|------|------|------|------|
| Agriculture                  | 8    | .6   | 8    | 9    |
| Mining                       | 2    | 1    | 2    | 2    |
| Manufacturing                | 25   | 16   | 29   | 33   |
| Contract construction        | 4    | 2    | 4    | 3    |
| Transportation               | 8    | 9    | 7    | 6    |
| Power, gas and communication | 3    | 5    | 3    | 2    |
| Trade                        | 14   | 14   | 15   | 12   |
| Finance                      | 12   | 13   | 8    | 6    |
| Government                   | 8    | 16   | 12   | 17   |
| Service                      | 10   | 12   | 8    | 7    |
| Miscellaneous                | 5    | 6    | 4    | 3    |
| Total                        | 100  | 100  | 100  | 100  |

<sup>a</sup> Computed from Milton Gilbert and George Jaszi, "National Income and National Product in 1943," *Survey of Current Business*, April, 1944, Table 16, p. 15. See also their remarks in their preceding annual resumé, *Survey of Current Business*, March, 1943, p. 16.

of factor payment, the problems discussed in §§ 10-13 concerning the division between interest and profits are not reflected here. Tables showing each of the factor payments (dividends, interest, and the like) broken down by industries (agriculture, mining, and so on) may be found in some of the publications by Kuznets and the Commerce Department.<sup>1</sup>

The broad categories in Tables 46 and 47 carry their common meanings, except perhaps in a few cases.<sup>2</sup>

"Finance" includes a sub-category, "real estate," which in turn

<sup>1</sup> Robert R. Nathan, *Income in the United States, 1929-37* (United States Department of Commerce), Tables 15-25; Kuznets, *op. cit.*, Tables 13, 16, 18, 19, 20, 21, 23, 26-29, 34, 35, 45-56, 62-73, 74-76, the tables in part IV, pp. 543 ff. and part V, pp. 853 ff., and *Survey of Current Business*, March, 1943, p. 23, Table 16.

<sup>2</sup> A convenient, quick view of the major decisions made in constructing the industrial classification is given in Kuznets, *op. cit.*, II, 392-93.

includes net rents received by individuals from all real property owned by them, no matter in what industry the real estate is utilized, and regardless of whether the individual can be considered as "in the real estate business." "Real estate" also includes interest paid on indebtedness of individuals secured by real estate mortgages. In Kuznets' data it also includes the imputed net rent on owner-occupied houses.

"Service" includes, not retail and other services connected with marketing tangible goods, but instead professional (legal, etc.), personal (hotels, etc.), recreational and amusement (motion picture production, etc.), domestic (housekeepers, etc.), business (accounting, advertising, etc.) and various others (services to automobiles, etc.).

"Miscellaneous" includes industries in which, for lack of data, salaries and wages could not be estimated directly (§ 9).

16. The data in Table 46 are selected to cover diverse years: the peak of the boom of the nineteen-twenties, the depth of the depression, the last year before defense and war altered the economy, and a war year. The relative stability of the importance of some industries — agriculture, transportation, and trade — is noticeable. Others remain stable in terms of the entire economy, but are so small in any case that this result accompanies large fluctuations in the percentages (mining, contract construction). Government's share reflects, not government expenditures, but government payroll and interest payments.

Kuznets' data, covering the twenty years 1919-38, indicate a fairly high degree of stability in the percentages, aside from the deep depression years. Table 47 compares 1921 with 1938, both years of depression, but not catastrophic like 1931-33.<sup>1</sup>

17. It was suggested in Chapter 7, § 12, that two industry-by-industry distributions may be made. One distribution would include in the national income produced by each industry the amount paid by that industry in taxes. Such a distribution shows the value added by one industry, relative to that added by another, in terms of what consumers are willing to pay to get the services supplied in the two industries. The other distribution would include only the amounts

<sup>1</sup> For discussion of the topics covered in this chapter, see United States Department of Commerce, *National Income in the United States, 1929-35*, pp. 53-55 and Kuznets, *op. cit.*, II, 407-10. For explanations of the industrial classification of interest and dividends paid and received, and profits, see Gardner F. Derrickson, "Trend of Corporate Profits, 1929-45," *Survey of Current Business*, 1946, pp. 11-12.



TABLE 47

National Income, Percentages by Industrial Divisions, United States, 1921 and 1938 (Kuznets)<sup>a</sup>

|  | 1921  | 1938  |
|--|-------|-------|
| Agriculture                                  | 9.2   | 8.4   |
| Mining                                       | 2.8   | 1.7   |
| Manufacturing                                | 20.9  | 19.4  |
| Construction                                 | 3.3   | 2.6   |
| Transportation and other<br>public utilities | 10.5  | 8.5   |
| Trade  | 15.8  | 14.3  |
| Finance                                      | 12.9  | 10.1  |
| Service                                      | 11.1  | 13.7  |
| Government                                   | 10.3  | 16.7  |
| Miscellaneous                                | 3.3   | 4.6   |
| Total  | 100.0 | 100.0 |

<sup>a</sup> Kuznets, *op. cit.*, I, 164. The percentages for 1921 are affected slightly by the fact that data were lacking to permit (a) subtraction of corporate capital gains and losses by industrial divisions for the years prior to 1929, and (b) adjustment of depreciation to current market or reproduction-cost value of the assets, rather than the cost value, for all the years. Kuznets, *op. cit.*, II, 410-12. Also, the percentages by categories are inconsistent with the total, with respect to area coverage; in all except "Miscellaneous," the percentages represent income paid by, not received by, residents of the United States; the counter-adjustment to reach a correct total is made in "Miscellaneous." Kuznets, *op. cit.*, II, 416.

received by the factor owners for their own use, reflecting their relative rewards in the two industries. The Commerce Department and Kuznets distributions, shown in Tables 46 and 47, are based neither on one nor the other of these two methods. The amounts they credit to each industry include the amounts that go to pay personal income taxes (and corporate income taxes, in the revised Commerce series) and payroll taxes, but not other taxes, for reasons stated in Chapter 7, §§ 38, 39.

If two measures of industry distribution seem to produce confusion, it should be recalled that even the single distribution that would result if no taxes were collected from business would be ambiguous at best. A monopolistic profit cannot be termed "value added" in

any sense except the restricted one that the consumers pay what they have to and the suppliers and employees of the monopolist get as much as they can. The government, as a tax monopolist, orders that the tax be paid if the product is to be obtained, and on these grounds the tax payments have as good a claim as the monopolists' profits to be included in the income produced by the taxed industry.

# 10

## Income by States

1. In the United States, estimates have been made of income in sub-national regions: states and even counties.<sup>1</sup> These estimates encounter in intensified form the problem noted in Chapters 1, § 1, and 6, § 45. Shall the income of a region include all the income originating in the physical assets and the working force of the region, even though some of the income flows to residents elsewhere? Or shall it include all of the income received by the residents of a region even though some of it was produced with the aid of the physical assets and working force of another region? Under the first definition the copper-producing state of Montana is richer than under the second; New York is probably richer under the income-recipient definition than under the place-of-work definition.

The issue is sharper with the state than with the nation. A piece of property and its owner are more likely to be in different states than in different nations.

Moreover, an employee or the owner of an unincorporated concern may spend his working day in one state while his residence is in another. Consequently, in the smaller political units of states, counties, and cities the issue of place-of-residence versus place-of-activity concerns not only income from capital but also income from labor. In international comparisons, on the other hand, the problem is confined almost entirely to property incomes, except where the economic effects of emigration or immigration are studied.<sup>2</sup>

<sup>1</sup> In general, and in addition to the citations later in this chapter, see Oswald W. Knauth, *Distribution of Income by States in 1919*; Maurice Leven, *Income in the Various States . . . 1919, 1920, and 1921*; and W. M. Adamson, *Income in Counties of Alabama, 1929 and 1935*.

<sup>2</sup> " . . . the average Swedish industrial worker costs about 20,000 Kroner [\$5000]. When, therefore, Sweden sent its million or more emigrants to the United States, it thereby

2. Allocating income according to its origin is the preferable alternative if the study is one of economic geography — the effect of climatic conditions on production, for example. It is also the preferred procedure in studies of the relative amounts of factor income associated with the output of a particular product: for instance, what percentages of the income of Montana, as a mining and pastoral state, go to land rent, wages and salaries, and interest and dividends, compared with the percentages for an industrial state like Pennsylvania? To answer certain political questions, too, the income must be allocated to place of origin. The residents of the state may want to know the theoretical and practical limits of their economic power to tap the income stream with their taxing machinery. In case of war nations need to know what the domestically located mines and factories can produce, whether or not owned by residents of other nations. And the residents of a region that sends large amounts of property income to owners living in other states want income computed on the basis of origin to test for the existence of what they would consider to be exploitation. Finally, the extent to which some areas will be called upon or will consent to aid other areas through federal or state grants-in-aid may depend in part on what the origin data show. The state or county that is poor under the residence test might be able to cover its expenses through taxes levied on a location-of-business basis, although difficult questions of fairness are involved in such taxation.

For all these purposes the product approach is probably the most useful. If the factor-payment method is used, reckoning from the residence of the payor rather than payee, the before-tax variant is preferable.

For some of these purposes, the regional income allocated on a place-of-business basis may be divided by the residents of the region to give a per-person income, but for studies of economic geography and to some extent in studies of relative amounts of factor income, such a figure would be meaningless or misleading.

3. Allocating income according to the residence of the recipient is required for a study of relative economic welfare of groups of persons living within given areas. In principle, the after-tax variant of the factor-payment rule should be followed. Incomes should be counted

lost many hundreds of millions of Kroner . . . ” “N. H.,” “Current Events in Sweden” (quoting Dr. Mohn), *The American Swedish Monthly*, July, 1946, pp. 25-26.

after taxes, but with the addition of consumer services provided by government and transfer payments. However, no estimates have yet been made of the regional distribution of such governmental services. Moreover, there is a still more formidable barrier to regional allocation of income on the welfare basis. If the government finances its services to consumers by borrowing money, there should be deducted the liability represented by the loan. But this liability is impossible to distribute regionally. At the time the loan is made, no one knows what regions are going to have to pay it back or pay the interest on it. The government this year borrows money from residents of New York and buys food stocks from the residents of Iowa to distribute free of charge to some residents of Montana. For the time being, no one can say which of the forty-eight states are going to suffer the loss of economic welfare that will be at least a partial offset to the gain in welfare of the residents of Montana. Of course, the longer the period of time studied, the less the unallocated burden would probably be.

For studying causes of change in consumer spendings within a region, the allocation of national income on a residence basis is obviously better than allocation by place of origin. Still better would be the series on income payments to individuals, if they were modified by deducting personal taxes. "Income payments to individuals" ("personal income" in the revised series), as compiled by the Commerce Department, differs from national income by excluding corporate savings and contributions by both employees and employers to social security funds, and by including "public assistance and other direct relief, veterans' pensions, adjusted service benefits (the soldier's bonus), retirement payments by government, social insurance benefits, the government's contributions to allowances paid to dependents of enlisted military personnel, and mustering-out payments."<sup>1</sup> It does not, however, deduct personal taxes. A modification of the payment series by including gifts (and deducting them from the income of the donor) would, in principle, aid the study of consumption by regions, but data on such transfers are difficult to compile, and the amounts involved are probably small.

4. Matters of principle aside, and after consideration of clearly insurmountable barriers in practice, there remain some difficult practical problems of computing incomes by intra-national regions. They

<sup>1</sup> Charles F. Schwartz and Robert E. Graham, Jr., "State Income Payments in 1945," *Survey of Current Business*, August, 1946, p. 19.

may be illustrated by noting the practice followed by the Department of Commerce. Its state-by-state computations are of income payments to individuals, not national income. The questions of principle noted above had something to do with that decision. But the practical problem of allocating corporation undistributed profits by states was also a decisive factor. It would be possible (with some qualifications, though it has not yet been done) to allocate the undistributed profits of a year among the states of residence of the stockholders. Such allocation would be possible, however, only if basic data on stockholder residence were first compiled. Negative undistributed profits would have to be allocated also.

Wage and salary data gathered in censuses are usually on the basis of place of business. Hence, in areas like New York, Philadelphia, and District of Columbia, a place-of-residence allocation is difficult. The Commerce Department has made some adjustment in its data to correct for part of this error.<sup>1</sup>

Dividends paid are recorded in *Statistics of Income* according to the state in which the corporation's return is filed; that is, the state where the principal place of business or principal office is located. The physical assets that produce the property income are often located in other states. Data on the location of such assets have not been compiled. In practice, therefore, a satisfactory calculation of income by state of origin is not yet possible. Even if data on location of assets were available, there would remain the task of allocating the profits of the firm among these assets; no mere physical description of assets would suffice for this allocation.

*Statistics of Income* does not record all the dividends, interest, and rents received by individuals in any one area, since some of the individuals are exempt from tax or from filing returns, or receive tax-exempt interest on state and local bonds that they do not report fully. Moreover, for wealthy property-owners who spend substantial parts of the year living in two or more states, the concept of residence is ambiguous. The allocation of property income on the basis of residence of recipient is therefore somewhat imprecise.

In wartime the pay of members of the armed forces raises questions of principle and practice if the allocation is to be made on grounds of residence of recipient. The Commerce Department in its series "State Income Payments" (a) includes only payments to residents of

<sup>1</sup> *Survey of Current Business*, August, 1941, p. 15, and August, 1946, p. 19.

the continental United States, and excludes, therefore, the pay of armed forces and federal civilian employees stationed outside the country<sup>1</sup>; (b) allocates to the state of duty the pay to the armed forces, excluding family-allowance payments by the government, soldiers' contributions to these allowances, and voluntary allotments of pay to individuals by members of the armed forces; (c) allocates these allowance payments and allotments to the state of residence of the recipient. The excluded portion noted in item (a) is included, however, in the Department's monthly income-payments (personal income) estimate for the country as a whole.

5. The shortcomings of the income-payments series as a measure of income on a residence basis need continued study in view of the importance the income-payment series is assuming in plans for federal aid to the states. In several recent bills the amount of aid to be received by a state for education or health programs is made

TABLE 48

**Income Payments to Individuals, by Type of Payment, Selected Years, United States, 1929-44 (Commerce)<sup>a</sup>**

(in billions of current dollars)

|                                   | 1929 | 1933 | 1939 | 1940 | 1941 | 1942  | 1943  | 1944  |
|-----------------------------------|------|------|------|------|------|-------|-------|-------|
| Wages and salaries <sup>b</sup>   | 52.4 | 28.6 | 43.9 | 48.0 | 59.9 | 77.9  | 96.4  | 101.7 |
| Proprietors' income <sup>c</sup>  | 13.8 | 6.6  | 11.0 | 11.8 | 15.8 | 20.4  | 23.4  | 24.0  |
| Property income <sup>d</sup>      | 15.3 | 8.7  | 11.0 | 11.3 | 12.3 | 12.8  | 13.7  | 14.7  |
| Other income <sup>e</sup>         | 1.1  | 2.3  | 4.8  | 4.7  | 4.3  | 4.2   | 5.8   | 9.3   |
| United States, total <sup>f</sup> | 82.6 | 46.3 | 70.6 | 75.9 | 92.3 | 115.3 | 139.3 | 149.7 |

<sup>a</sup> *Survey of Current Business*, August, 1946, p. 21, Table 8.

<sup>b</sup> After deduction of employees' contributions to Social Security, Railroad Retirement, Railroad Unemployment Insurance, and government retirement programs. Includes pay of the armed forces, net of contributions to family-allowance payments and of voluntary allotments of pay to individuals (see note a, Table 49).

<sup>c</sup> Represents net income of unincorporated businesses, including farms, before owners' withdrawals.

<sup>d</sup> Includes dividends, interest, net rents, and royalties.

<sup>e</sup> Includes direct relief, work relief; labor income items such as pensions, compensation for injuries, and social insurance benefits; mustering-out payments to veterans (in 1944); and (in 1942-44) family-allowance payments and voluntary allotments to dependents of military personnel (allocated to state of dependents' residence).

<sup>f</sup> Includes only payments to residents of the continental United States; excludes, therefore, pay of armed forces and federal civilian employees stationed outside the country.

<sup>1</sup> But it includes "that part [of such pay] flowing into [the continental United States] ... in the form of voluntary allotments of pay and contributions to family allowance payments by military personnel to their dependents." *Survey of Current Business*, August, 1946, p. 19.

TABLE 49

Percentage Distribution of Total Income Payments to Individuals,  
by Regions and States, Selected Years, United States, 1929-45  
(Commerce)<sup>a</sup>

| Region and State          | 1929   | 1940   | 1941   | 1942   | 1943   | 1944   | 1945   |
|---------------------------|--------|--------|--------|--------|--------|--------|--------|
| Continental United States | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| New England               | 8.22   | 8.07   | 7.98   | 7.73   | 7.30   | 7.10   | 7.04   |
| Connecticut               | 1.77   | 1.87   | 1.99   | 2.02   | 1.89   | 1.80   | 1.71   |
| Maine                     | .54    | .57    | .55    | .58    | .61    | .57    | .54    |
| Massachusetts             | 4.58   | 4.36   | 4.17   | 3.90   | 3.67   | 3.62   | 3.67   |
| New Hampshire             | .37    | .35    | .33    | .30    | .27    | .27    | .29    |
| Rhode Island              | .70    | .67    | .70    | .71    | .66    | .63    | .62    |
| Vermont                   | .26    | .25    | .24    | .22    | .20    | .21    | .21    |
| Middle East               | 33.70  | 32.06  | 30.57  | 28.69  | 27.60  | 27.84  | 28.18  |
| Delaware                  | .26    | .31    | .30    | .27    | .27    | .27    | .26    |
| D. C.                     | .77    | 1.19   | 1.13   | 1.09   | 1.04   | 1.01   | 1.06   |
| Maryland                  | 1.34   | 1.61   | 1.64   | 1.73   | 1.71   | 1.67   | 1.62   |
| New Jersey                | 3.96   | 4.14   | 3.98   | 3.92   | 3.83   | 3.83   | 3.70   |
| New York                  | 17.53  | 15.60  | 14.51  | 13.12  | 12.59  | 12.88  | 13.30  |
| Pennsylvania              | 8.88   | 8.21   | 8.03   | 7.62   | 7.28   | 7.27   | 7.29   |
| West Virginia             | .96    | 1.00   | .98    | .94    | .88    | .91    | .95    |
| Southeast                 | 10.51  | 11.92  | 12.55  | 13.37  | 13.80  | 14.07  | 14.21  |
| Alabama                   | .97    | 1.00   | 1.12   | 1.23   | 1.25   | 1.27   | 1.30   |
| Arkansas                  | .68    | .65    | .71    | .77    | .70    | .73    | .77    |
| Florida                   | .84    | 1.19   | 1.15   | 1.27   | 1.50   | 1.53   | 1.56   |
| Georgia                   | 1.16   | 1.30   | 1.35   | 1.41   | 1.52   | 1.56   | 1.55   |
| Kentucky                  | 1.17   | 1.16   | 1.13   | 1.15   | 1.20   | 1.22   | 1.25   |
| Louisiana                 | 1.04   | 1.12   | 1.16   | 1.21   | 1.33   | 1.32   | 1.26   |
| Mississippi               | .66    | .58    | .68    | .76    | .77    | .77    | .76    |
| North Carolina            | 1.17   | 1.49   | 1.56   | 1.61   | 1.59   | 1.66   | 1.69   |
| South Carolina            | .53    | .72    | .76    | .83    | .81    | .83    | .83    |
| Tennessee                 | 1.10   | 1.22   | 1.32   | 1.31   | 1.40   | 1.47   | 1.54   |
| Virginia                  | 1.19   | 1.49   | 1.61   | 1.82   | 1.73   | 1.71   | 1.70   |

<sup>a</sup> *Survey of Current Business*, August, 1946, p. 12, Table 1. See also the notes to Table 48. "Income payments" includes part of the pay of the armed forces. Part of the total pay is devoted to family-allowance payments and voluntary allotments to individuals. This part is allocated according to the residence of the recipient of the allowance or allotment. The rest of the pay is allocated to the state in which the member of the armed forces is serving, or, if he is serving abroad, it is not included in the series.



TABLE 49 (continued)

Percentage Distribution of Total Income Payments to Individuals,  
by Regions and States, Selected Years, United States, 1929-45  
(Commerce)

| Region and State | 1929  | 1940  | 1941  | 1942  | 1943  | 1944  | 1945  |
|------------------|-------|-------|-------|-------|-------|-------|-------|
| <b>Southwest</b> | 5.03  | 5.15  | 5.13  | 5.57  | 6.02  | 6.07  | 5.96  |
| Arizona          | .30   | .31   | .31   | .37   | .42   | .38   | .38   |
| New Mexico       | .19   | .25   | .24   | .26   | .27   | .27   | .28   |
| Oklahoma         | 1.31  | 1.09  | 1.04  | 1.13  | 1.13  | 1.19  | 1.19  |
| Texas            | 3.23  | 3.50  | 3.54  | 3.81  | 4.20  | 4.23  | 4.11  |
| <b>Central</b>   | 29.32 | 28.56 | 29.05 | 28.52 | 28.23 | 27.90 | 27.90 |
| Illinois         | 8.52  | 7.57  | 7.47  | 6.97  | 6.71  | 6.83  | 6.93  |
| Indiana          | 2.27  | 2.45  | 2.64  | 2.66  | 2.68  | 2.64  | 2.61  |
| Iowa             | 1.63  | 1.63  | 1.66  | 1.70  | 1.69  | 1.53  | 1.65  |
| Michigan         | 4.29  | 4.51  | 4.63  | 4.71  | 4.90  | 4.73  | 4.37  |
| Minnesota        | 1.75  | 1.88  | 1.76  | 1.75  | 1.69  | 1.62  | 1.75  |
| Missouri         | 2.67  | 2.52  | 2.56  | 2.51  | 2.43  | 2.40  | 2.49  |
| Ohio             | 5.95  | 5.86  | 6.12  | 6.01  | 5.97  | 5.95  | 5.84  |
| Wisconsin        | 2.24  | 2.14  | 2.21  | 2.21  | 2.16  | 2.20  | 2.26  |
| <b>Northwest</b> | 4.75  | 4.44  | 4.45  | 5.06  | 5.10  | 4.92  | 5.03  |
| Colorado         | .77   | .78   | .75   | .84   | .82   | .75   | .81   |
| Idaho            | .28   | .31   | .30   | .35   | .34   | .35   | .34   |
| Kansas           | 1.20  | 1.00  | 1.05  | 1.24  | 1.31  | 1.29  | 1.27  |
| Montana          | .39   | .42   | .40   | .40   | .37   | .37   | .35   |
| Nebraska         | .92   | .75   | .71   | .85   | .87   | .85   | .88   |
| North Dakota     | .32   | .31   | .36   | .38   | .38   | .37   | .39   |
| South Dakota     | .35   | .32   | .33   | .37   | .37   | .35   | .39   |
| Utah             | .33   | .35   | .36   | .44   | .47   | .41   | .42   |
| Wyoming          | .19   | .20   | .19   | .19   | .17   | .18   | .18   |
| <b>Far West</b>  | 8.47  | 9.80  | 10.27 | 11.06 | 11.95 | 12.10 | 11.68 |
| California       | 6.31  | 7.39  | 7.64  | 7.98  | 8.67  | 8.80  | 8.59  |
| Nevada           | .09   | .12   | .11   | .17   | .14   | .13   | .13   |
| Oregon           | .73   | .84   | .89   | 1.02  | 1.10  | 1.07  | 1.01  |
| Washington       | 1.34  | 1.45  | 1.63  | 1.89  | 2.04  | 2.10  | 1.95  |

to depend in part on the amount of income payments received in the state as shown by the Department of Commerce series. Moreover, the relative claims of the residence measure and the origin measure for this purpose need to be examined.<sup>1</sup>

6. Table 48 presents the total of income payments for the United States, as compiled by the Department of Commerce, subdivided by type of income. Table 49 gives the geographic distribution of income payments to individuals on a percentage basis. Table 48 covers 1929, 1933, and 1939-44; Table 49 presents data for 1929 and 1940-45.

No tabulations have been made for national income by states, either by origin of income or residence of recipient.<sup>2</sup>

<sup>1</sup> See Paul H. Wueller, "Income and the Measurement of the Relative Capacities of the States," and discussion by several others, in *Studies in Income and Wealth*, III.

<sup>2</sup> For a discussion of the conceptual and practical difficulties of allocating income by states, see R. R. Nathan, "Some Problems Involved in Allocating Incomes by States," and discussion by Simon Kuznets, in *Studies in Income and Wealth*, III, United States Department of Commerce, "Income Payments to Individuals, by States, 1929-38," *Survey of Current Business*, April, 1940; and Frederick M. Cone, *Monthly Income Payments in the United States, 1929-40* (United States Department of Commerce).

# 11

## The National Income of Great Britain

1. In 1941, the British Government published the first of its White Papers on sources of war finance and estimates of national income and expenditure for the United Kingdom. Successive annual editions of the White Paper have improved and elaborated the presentation. The latest one gives data for each of the years 1938-45 inclusive.<sup>1</sup>

2. The White Paper recognizes the concept, gross national product, and presents estimates of it for 1938-45. It also shows a gross total of a novel type: "gross national product at factor cost," which is, in effect, gross national product minus indirect taxes. However, the White Paper does not utilize either of these gross totals in comparing the relative importance of the several product components. For this latter purpose it uses either (a) the net national product at market prices (that is, national income plus indirect taxes minus subsidies), or (b) net national product at factor cost (that is, national income).

3. Expressing each of the product components as a percentage of

<sup>1</sup> Cmd. 6784. *National Income and Expenditure of the United Kingdom, 1938-1945*, presented to Parliament April, 1946, by the Financial Secretary to the Treasury. The earlier editions, with a longer title ("An Analysis of the Sources of War Finance and Estimates of the National Income and Expenditure in the Years 1938 to —"), appeared as Cmd. 6261 (1941), 6347 (1942), 6438 (1943), 6520 (1944), and 6623 (1945); available at British Library of Information, New York City. The text and tables were reprinted in full in the *Federal Reserve Bulletin* for July, 1941; June, 1942; August, 1943; July, 1944; August, 1945, and July, 1946. The April, 1947 White Paper is Cmd. 7099.

the national income is a task that the Commerce Department has not attempted. It will be recalled that both the Commerce Department and the British White Paper so define national income that it does not include indirect taxes. The amount of consumer purchases, the amount of gross and net domestic investment, the amount of government purchases, and even some elements in the net change in claims on non-residents all include indirect taxes: that is, part of the amounts spent under these headings goes to cover indirect taxes rather than just the factor payments (as computed before deducting direct taxes) that make up the national income. Consequently, if each product component is to be expressed as a percentage of national income, each must be purified of its indirect-tax element. The White Paper does this, estimating the amount of indirect taxation in each of the components and subtracting it. The components themselves are given in somewhat less detail than in the United States computations.

TABLE 50  
Composition of "Net National Product," United Kingdom,  
1938-45<sup>a</sup>

(in millions of pounds sterling)

|  | 1938  | 1939  | 1940  | 1941   | 1942  | 1943  | 1944  | 1945  |
|--|-------|-------|-------|--------|-------|-------|-------|-------|
| <b>National cost<sup>b</sup> of:</b>                     |       |       |       |        |       |       |       |       |
| Consumption  |       |       |       |        |       |       |       |       |
| Personal   | 3,602 | 3,659 | 3,796 | 3,839  | 4,010 | 4,006 | 4,285 | 4,582 |
| Government   | 456   | 473   | 483   | 508    | 531   | 532   | 544   | 578   |
| War  | 338   | 754   | 2,595 | 3,717  | 3,988 | 4,552 | 4,546 | 4,147 |
| Net non-war capital formation                            | 214   | 74    | -952  | -1,178 | -929  | -972  | -974  | -824  |
| Net national product at factor cost (or national income) | 4,610 | 4,960 | 5,922 | 6,886  | 7,600 | 8,118 | 8,401 | 8,483 |
| <b>Percentages:</b>                                      |       |       |       |        |       |       |       |       |
| Consumption  | 88    | 83    | 72    | 63     | 60    | 56    | 58    | 61    |
| War  | 7     | 15    | 44    | 54     | 52    | 56    | 54    | 49    |
| Net non-war capital formation                            | 5     | 2     | -16   | -17    | -12   | -12   | -12   | -10   |
| Net national product at factor cost                      | 100   | 100   | 100   | 100    | 100   | 100   | 100   | 100   |

<sup>a</sup> Cmd. 6784, p. 6, Table 4.

<sup>b</sup> Expenditure at market value, less indirect taxes, plus subsidies.

Likewise, the White Paper estimates the amount of subsidies — paid for the purpose of keeping market prices down — that affected each group of products, and these subsidies are added, as part of the process of converting each market-price subtotal to a national income subtotal.

Table 50 presents estimates for a division of the national income into four components: personal consumption, government non-war expenditures, government war expenditures, and net (non-war) capital formation. The net-capital-formation item includes what the Commerce Department calls net export of goods and services, and net change in inventories, as well as net change in producers' plant and durable equipment and residences. The table heading contains the term "net national product," but this is to be understood in the British sense of "net national product at factor cost" — that is, national income, not in the Commerce Department sense of national income plus indirect taxes (and after certain adjustments).

4. All these data are in current prices. The British national income series, in general, have not been adjusted by an index of product prices, as have those in the United States. No deflated series for total national income is presented, largely because of "the absence of information as to the relative efficiency of production in the war and non-war sectors of the economy."<sup>1</sup> The only component series thus

TABLE 51  
Personal Consumption, at Factor Cost,<sup>a</sup> at Current and 1938  
Prices, United Kingdom, 1938-45<sup>b</sup>

(in millions of pounds sterling)

|                      | 1938  | 1939  | 1940  | 1941  | 1942  | 1943  | 1944  | 1945  |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| At current prices    | 3,602 | 3,659 | 3,796 | 3,839 | 4,010 | 4,006 | 4,285 | 4,582 |
| At 1938 prices       | 3,602 | 3,603 | 3,241 | 3,001 | 2,963 | 2,844 | 2,974 | 3,115 |
| <b>Index Numbers</b> |       |       |       |       |       |       |       |       |
| (1938 = 100)         |       |       |       |       |       |       |       |       |
| At current prices    | 100   | 102   | 105   | 107   | 111   | 111   | 119   | 127   |
| At 1938 prices       | 100   | 100   | 90    | 83    | 82    | 79    | 83    | 86    |

<sup>a</sup> At market prices, less indirect taxes and plus subsidies.

<sup>b</sup> Cmd. 6784, p. 7, Table 5.

<sup>1</sup> D. G. Champenowne, "The National Income and Expenditure of the United Kingdom, 1938-1945," *Bulletin of the Oxford University Institute of Statistics*, May, 1946, p. 134.

adjusted is that for consumers' expenditures, shown in Table 51. However, Champernowne has estimated the 1938, 1939, 1943, 1944, and 1945 national income in terms of 1945 prices, and finds an increase, in billions of pounds sterling, from 6.9 in 1938 to 8.48 in 1945, the latter figure being composed of 4.33 non-war production and 4.15 war production.<sup>1</sup>

5. In the capital-formation series, net change in inventory is not stated separately in any of the White Paper tables; it is one of the elements in "gross capital formation." To get "net capital formation" at market prices, depreciation and "maintenance" are subtracted, and "net lending abroad and purchase of assets and financial claims from overseas" are added. Indirect taxes estimated to fall on domestic gross capital formation are subtracted to put the net-capital-formation figure on a factor-cost (national income) basis. These computations are shown in Table 52.

6. In the White Paper published in 1944<sup>2</sup> an interesting experiment was made with the 1938 data, an experiment that was not repeated, however, in the 1945 issue. The aim was to take each of the product components of the gross national product total, and purify them of all elements except the part representing direct payment for the factors of production. This means excluding that part of consumer purchases, for example, that pays for the vendors' wearing down plant and machinery, or importing. Similarly, only the part of investment, public and private, that reflects the current use of domestic factors of production is included. The same part of exports is included. Net change in financial claims on foreigners is added. The result is national income, subdivided by the transactions that immediately gave rise to it. (See Chapter 6, § 65.)

The most interesting implication of this experiment was that the British had succeeded in breaking down depreciation into the parts caused by consumer purchases, by government purchases, by gross capital formation, and by exports. Similarly, they had apparently broken down imports into those four parts, as well as indirect taxes. Net change in inventories is not mentioned, and it is not evident how this item was handled. "Maintenance" is allocated and sub-

<sup>1</sup> *Ibid.*, pp. 134, 139.

<sup>2</sup> Cmd. 6623, Tables 3-7.

TABLE 52

Gross and Net Capital Formation (Non-War), United Kingdom,  
1938-45 <sup>a</sup>

(in millions of pounds sterling)

|   | 1938 | 1939 | 1940 | 1941   | 1942 | 1943 | 1944 | 1945 |
|---|------|------|------|--------|------|------|------|------|
| 1. Gross non-war capital formation at home <sup>b</sup> and war losses made good  | 780  | 826  | 364  | 170    | 283  | 251  | 211  | 534  |
| 2. less sums allowed for depreciation and maintenance                             | -475 | -485 | -505 | -515   | -520 | -520 | -520 | -520 |
| 3. Net capital formation at home <sup>b</sup> and war losses made good            | 305  | 341  | -141 | -345   | -237 | -269 | -309 | 14   |
| 4. Net lending abroad and purchase of assets and financial claims from overseas   | -70  | -250 | -804 | -816   | -663 | -680 | -659 | -819 |
| 5. Net capital formation at home and abroad                                       | 235  | 91   | -945 | -1,161 | -900 | -949 | -968 | -805 |
| 6. less net indirect taxes falling on gross capital formation at home             | -21  | -17  | -7   | -17    | -29  | -23  | -6   | -19  |
| 7. National cost of net non-war capital formation at home and abroad <sup>c</sup> | 214  | 74   | -952 | -1,178 | -929 | -972 | -974 | -824 |

<sup>a</sup> Cmd. 6784, p. 8, Table 6.<sup>b</sup> Including capital formation of public authorities.<sup>c</sup> Net non-war capital formation at home at market value less indirect taxes plus subsidies plus increase in net lending abroad and purchase of assets and financial claims from overseas.

tracted, like depreciation, because the British total of gross national product for this year includes, as part of the product, certain expenditures for maintenance; this element of double counting, like that represented by depreciation, must therefore be removed.

Table 53 shows these amounts for 1938, as published in the 1945 White Paper. The distribution of depreciation and maintenance, however, is more formal than real. After imports and indirect taxes are deducted from the total purchases of goods and services, the two remaining items, current factor cost, and depreciation and maintenance, are in the ratio 10 to 1. The same ratio is maintained in each of the sub-categories of expenditure. But the allocation of imports

**TABLE 53**  
**Purchases of Goods and Services, Broken Down by Elements in**  
**Purchase Price, United Kingdom, 1938 <sup>a</sup>**

(in millions of pounds sterling)

|  | Elements in Purchase Price |                                    |            |                   |                    |
|--|----------------------------|------------------------------------|------------|-------------------|--------------------|
|  | Current<br>Factor<br>Cost  | Depreciation<br>and<br>Maintenance | Imports    | Indirect<br>Taxes | Total              |
| Personal expenditure on consumer goods and services                            | 2,670                      | 269                                | 668        | 561               | 4,178 <sup>b</sup> |
| Expenditure by government on goods and services (other than capital formation) | 649 <sup>c</sup>           | 62                                 | 80         | 28                | 829 <sup>d</sup>   |
| Private gross capital formation  | 410                        | 41                                 | 80         | 19                | 550                |
| Government gross capital formation   | 188                        | 19                                 | 20         | 8                 | 235                |
| Exports  | 497                        | 49                                 | 100        | 22                | 668                |
| <b>Total</b>   | <b>4,414</b>               | <b>440</b>                         | <b>948</b> | <b>638</b>        | <b>6,460</b>       |

<sup>a</sup> Compiled from Tables 3, 4, 5, and 6, Cmd. 6623.

<sup>b</sup> Including £10 million remittances abroad, not included in preceding columns.

<sup>c</sup> Including £15 million subsidies.

<sup>d</sup> Including £10 million debt interest and other current payments abroad, not included in preceding columns.

and of indirect taxes among the sub-categories of expenditure follows no such mechanical rule.

7. The equation, private saving = investment + absolute amount of government deficit, is utilized in the White Paper to show the "ultimate sources" (Chapter 8, § 10) of the central government's net borrowing. The equation is rearranged from the standard form:

$$\begin{aligned} \text{Private saving} &= \text{Investment, private and government} \\ &\quad + \text{Government dissaving (deficit on current account)} \end{aligned}$$

as follows:

$$\left. \begin{aligned} &+ \text{Private saving} \\ &+ \text{local government saving} \\ &+ \text{private home disinvestment} \\ &+ \text{local government disinvestment} \\ &+ \text{disinvestment abroad} \end{aligned} \right\} \begin{array}{l} \text{(i.e., minus} \\ \text{investment)} \end{array} \left. \vphantom{\begin{aligned} &+ \text{Private saving} \\ &+ \text{local government saving} \\ &+ \text{private home disinvestment} \\ &+ \text{local government disinvestment} \\ &+ \text{disinvestment abroad} \end{aligned}} \right\} \begin{array}{l} \text{Central} \\ \text{= government} \\ \text{deficit} \end{array}$$

Central government capital formation is treated just like a current outlay in this tabulation; it goes to increase the central government



TABLE 54

The "Sources" of Central Government Net Borrowing, United Kingdom, 1938-45 <sup>a</sup>

(in millions of pounds sterling)

|   | 1938 | 1939 | 1940  | 1941  | 1942  | 1943  | 1944  | 1945  |
|---|------|------|-------|-------|-------|-------|-------|-------|
| 1. Saving —   |      |      |       |       |       |       |       |       |
| (a) Private   | 326  | 513  | 1,053 | 1,368 | 1,532 | 1,639 | 1,552 | 1,458 |
| (b) Extra-budgetary funds and local authorities                                     | 33   | 66   | 163   | 183   | 181   | 145   | 114   | 8     |
| 2. Sums released by running down domestic capital equipment and stocks <sup>b</sup> |      |      |       |       |       |       |       |       |
| (a) Private   | -180 | -246 | 78    | 406   | 353   | 403   | 386   | 377   |
| (b) Local authorities   | -101 | -70  | -8    | 23    | 34    | 38    | 42    | 37    |
| 3. Net sale of assets and increase in liabilities to countries abroad               | 70   | 250  | 804   | 816   | 663   | 680   | 659   | 819   |
| 4. Central government net borrowing (deficit)                                       | 148  | 513  | 2,090 | 2,796 | 2,763 | 2,905 | 2,753 | 2,699 |

<sup>a</sup> Cmd. 6784, Table 19, p. 21.<sup>b</sup> Including any unspent compensation in respect of war risks and insurance claims.

deficit on the right-hand side of the equation and does not serve to decrease the total of disinvestment on the left-hand side.

Table 54 reproduces the data from the White Paper corresponding to this rearranged equation. Item 2, "Sums released . . ." is equivalent to "disinvestment [at home]" except that it includes a sub-item for "compensation received in respect of war-damage claims," which might better appear under "saving" if the standard equation is in mind.

If this sub-item is eliminated from item 2, the balance is the same as the "net [non-war] capital formation at home" of Table 52 above, with the sign changed, except that Table 54 includes private war capital formation in the form of "Increase in work in progress on government account held under private finance," and ignores the non-war capital formation of the central government. The year 1942 exemplifies these differences:

|  |  |
|--|--|
| "Sums released . . ." (Table 54)   | 387  |
| Subtract "Compensation received in respect of war-damage claims" (item 86 in Table 23 of Cmd. 6784)                    | - 214  |
|  | <u>173</u> disinvestment   |
| Add "Increase in work in progress on government account held under private finance" (item 10 in Table 20 of Cmd. 6784) | 75   |
|  | <u>248</u> non-war disinvestment, disregarding central government non-war investment |
| Subtract net non-war capital formation of central government (item 71, Table 22, Cmd. 6784)                            | 11   |
|  | <u>237</u> non-war disinvestment (see Table 52, line 3)                              |

In the White Paper terminology, the "channels" of government finance, as distinguished from the "ultimate sources" of government finance, are those items that traditional public finance analysis has studied in ascertaining how the government borrows its money: defense bonds, other bonds sold to the public, tax-reserve certificates, and so on.<sup>1</sup>

8. The 1945 issue of the White Paper (Cmd. 6623), but not the 1946 issue (Cmd. 6784), contains an "Introduction" of several pages that explains in detail many of the interrelations of the data and implications of the concepts and sub-concepts utilized.<sup>2</sup>

9. No attempt at comparison of the totals for the United Kingdom with those for the United States is made in this chapter. Until there is more evidence of what the 1938-45 rates of exchange of the pound sterling against the dollar implied, a close comparison is not feasible.

<sup>1</sup> Thus, in Table 24, Cmd. 6784, the sum of item 104 ("Finance through government agencies") and item 113 ("public borrowing at home") equals item 4 of Table 19 ("Central government net borrowing").

<sup>2</sup> The several issues of the White Papers have been described and analyzed in various articles in economics journals. With respect to the 1945 issue, see Milton Gilbert and G. Jaszi, "The 1945 White Paper on National Income and Expenditure," *Economic Journal*, December, 1945, pp. 444-54; and D. G. Champernowne, *loc. cit.*

Moreover, it is likely that a meaningful comparison would need to sketch some of the differences in habits of life and work in the two countries (see Chapter 6, §§ 82–84).<sup>1</sup>

Comparison of United States data with those for countries other than Great Britain usually faces the added difficulty of lack of adequate data. National income analysts are currently devoting a large amount of time and effort to refining international comparisons, and until their work has reached a more advanced stage, there are few conclusions that can be formulated with respect to differences in national income.<sup>2</sup>

<sup>1</sup> The Department of Commerce data for 1929–42 are adjusted to the concepts used in the White Paper, and some comparisons between the two countries are made, in Richard Stone, "The National Income, Output and Expenditure of the United States of America, 1929–41," *Economic Journal*, June–September, 1942, and "National Income in the United Kingdom and the United States of America," *Review of Economic Studies*, Winter, 1942–43. For discussion of points covered in this chapter, see Richard Stone, "Two Studies on Income and Expenditure in the United States," *Economic Journal*, April, 1943. On pages 64–66, Stone explains his approach to the problem of government expenditures and receipts. See also the report to the Combined Production and Resources Board in 1945, *The Impact of the War on Civilian Consumption in the United Kingdom, the United States and Canada*.

<sup>2</sup> For recent discussions of the problems in international comparisons see the papers by Arthur Smithies ("National Income as a Determinant of International Policy"), Ta-Chung Liu and Shan-Kwei Fong ("The Construction of National Income Tables and International Comparisons of National Incomes"), Louis Bean ("International Industrialization and Per Capita Income"), Phyllis Deane ("Measuring National Income in Colonial Territories"), Ernest Doblin ("Measuring German National Income in Wartime"), and Paul Studenski ("Methods of Estimating National Income in Soviet Russia"), in *Studies in Income and Wealth*, VIII; and Ernest M. Doblin, "Estimates of National Income in 64 Countries," Colin Clark, "Construction of International Price Indexes for Purposes of Real Income Comparisons," and Ta-Chung Liu, "The National Income of China, 1931–36," mimeographed papers delivered before the Conference on Research in Income and Wealth, November, 1945.



# *Appendices*



# Appendix A

## FORMAL SHIFTING

Formal forward shifting occurs when, because of the forward shifting that takes place simultaneously in the rest of the economy, each taxpayer loses as much, as consumer and taxpayer, through increases in the prices of the things he buys and through an increase in the amount of tax he pays, as he gains through an increase in his income. His real position is thus unchanged.

In contrast, under real forward shifting (Chapter 7, § 15), the taxpayer's increase in income is not offset by an increase in amount of tax paid or by a rise in the price of the things he buys. Under real shifting (complete) he gains enough to offset the entire tax he pays; under formal shifting he gains enough only to offset the concurrent *increase* in tax and increase in the cost of things he buys.

Formal backward shifting occurs when, because of the backward shifting process taking place in the rest of the economy, each taxpayer loses, net, through a decline in his money income minus a decline in the amount of tax he pays, the same amount that he gains through a decline in the prices of the things he buys. Under real backward shifting no decline in his money income is assumed.

A distinction between complete and fractional shifting may be made in the formal case, as in the real case, as will be illustrated in the examples below. However, the distinction itself becomes purely formal, for it does not serve to indicate a probable upward limit to the shifting process, as it does in the analysis of real shifting.

Two illustrations of formal shifting are presented here, under a 50 per cent income tax.

The 50 per cent income tax is first assumed to be shifted forward in higher factor prices and higher product prices, to the extent that each taxpayer has just the same money income after paying the tax that he had when there was no tax. B' and C', the private employees, get higher money wages; B and C,

the employers, get larger money profits. Moreover, the government employees, A and A', get higher salaries to match the higher price level. When the adjustment is complete, no one is better or worse off relative to any of the others than he was under no shifting. The forward shifting has been merely formal; no real shifting of the tax burden has occurred. Although the tax rate is only 50 per cent, there is a 100 per cent increase in the price level.

TABLE A-1  
An Example of Complete Formal Forward Shifting

| Income Recipient | Money Income before Deducting Tax | Tax   | Money Income after Deducting Tax | Consumption Expenditure | Services from Government |
|------------------|-----------------------------------|-------|----------------------------------|-------------------------|--------------------------|
| A                | \$200                             | \$0   | \$200                            | \$200                   | \$0                      |
| A'               | 200                               | 0     | 200                              | 200                     | 0                        |
| B                | 200                               | 100   | 100                              | 100                     | 100                      |
| B'               | 200                               | 100   | 100                              | 100                     | 100                      |
| C                | 200                               | 100   | 100                              | 100                     | 100                      |
| C'               | 200                               | 100   | 100                              | 100                     | 100                      |
| Total            | \$1200                            | \$400 | \$800                            | \$800                   | \$400                    |

The example is one of complete formal shifting, not fractional formal shifting. The shifting is complete in the sense that B, for example, has the same money income after tax that he would have had with his old income if he had been exempt from tax. His real income in the two cases is, of course, different.

Fractional formal shifting would occur if all factor prices and product prices rose by something less than 100 per cent (under a 50 per cent tax rate). Each person's income might be \$110, for instance; the tax, \$55 per taxpayer.

If incomes are counted before deduction of tax in the example of complete formal shifting, and government services are not included in consumers' incomes, each person has one sixth of the national income, as before shifting. Each person's money income has been increased from \$100 to \$200 by the forward shifting. If two periods are compared, one before and one after shifting has occurred, an index of product prices will be used to deflate the data of the second period. The price index for the second period will be 200 (first period = 100). Then the \$1200 national income will be deflated to \$600, the same amount found in the previous period under no shifting.

The same result is obtained if incomes are computed after deducting taxes paid and after including government services received by the consumer.

The fact that the shifting is formal, not real, is demonstrated by the fact that the percentage shares in the national income of each of the persons is the same before and after shifting. If incomes are computed as factor rewards



before deducting taxes, the share of each individual is  $16\frac{2}{3}$  per cent. For example, before shifting, A's share is  $\frac{100}{600}$ ; after shifting,  $\frac{200}{1200}$ .

If incomes are computed as the sum of (a) factor rewards after deducting taxes plus (b) services rendered to the consumer by the government, the percentage shares are the same as immediately above.

The government's rôle in the economy is still properly expressed by computing tax revenue as a percentage of national income.

The total of money payments in the economy is, of course, just double that of the illustration in Chapter 7, § 13, where no shifting occurred. If the stock of money was not increased, the transactions velocity (total payments divided by stock of money) would have to double.

Backward shifting may occur: each taxpayer may force lower prices for the things he buys. Government salaries drop as the price level drops. Under complete formal backward shifting the money cost of an unchanged physical volume of consumption decreases by an amount equal to the tax on the new low money income. As in complete forward shifting, where the increase in the cost of things purchased is ignored, and equivalence is postulated only between total tax, at the new level, and income-increase, as the criterion of completeness in shifting, so here the decrease in income is ignored, and equivalence is postulated between total tax, at the new low level, and decrease in money outlay on consumption, as the criterion of completeness in shifting. In the hypothetical economy used above, with a 50 per cent income tax, this would require a fall in incomes to \$50 each. Fractional formal backward shifting would be something short of this. Table A-2 illustrates a type of formal shifting that is both backward and fractional, and thus contrasts with Table A-1 in two respects:

TABLE A-2  
An Example of Fractional Formal Backward Shifting

| Income Recipient | Money Income before Deducting Tax | Tax      | Money Income after Tax | Consumption Expenditure | Services from Government |
|------------------|-----------------------------------|----------|------------------------|-------------------------|--------------------------|
| A                | \$66.67                           | \$ 0     | \$66.67                | \$66.67                 | \$ 0                     |
| A'               | 66.67                             | 0        | 66.67                  | 66.67                   | 0                        |
| B                | 66.67                             | 33.33    | 33.33                  | 33.33                   | 33.33                    |
| B'               | 66.67                             | 33.33    | 33.33                  | 33.33                   | 33.33                    |
| C                | 66.67                             | 33.33    | 33.33                  | 33.33                   | 33.33                    |
| C'               | 66.67                             | 33.33    | 33.33                  | 33.33                   | 33.33                    |
| Total            | \$400                             | \$133.33 | \$266.67               | \$266.67                | \$133.33                 |

Although the tax rate is 50 per cent, the price index falls only to  $66\frac{2}{3}$  (from 100 before shifting and before government activity). Inflating by the index will produce the same total of national income that is recorded under no

shifting. Each person still receives  $16\frac{2}{3}$  per cent ( $\frac{a a . a a}{400}$ ), of the national income. Tax revenue as a percentage of national income still expresses the government's role in the economy. The total of money payments drops to \$800, implying a decrease of one third in the transactions velocity of an unchanged money stock.

The meaning and implications of formal shifting may now be stated more precisely. Formal shifting of a tax is a change in product prices or factor prices or both, of a size and distribution so that each person in the economy has the same percentage share in, or command over, the resources of the economy as he would have had if no shifting had occurred.

Formal forward shifting can occur only if the tax is uniformly proportional to income throughout the private sector of the economy. The rise in the prices of the services performed or goods sold by the taxed individual hits directly only others than himself. It is scarcely possible that they in turn can concentrate their price reactions on the taxpayer to retake from him in higher prices precisely what he has taken from them. Yet this would be necessary, and the process would have to be mutual, to obtain formal shifting under a tax that was at a lower rate on some than on others.

In complete formal forward shifting, if the tax rate applies to the money flow as swollen by the shifting process, the price level must rise by a percentage greater than the tax rate. This is illustrated above, where the tax rate of 50 per cent precipitates a rise in the price level of 100 per cent. Complete formal forward shifting is achieved when the taxpayer's income has risen so much that, after the percentage tax, he has as much money as before the tax was imposed. As the money incomes rise, the tax revenue rises. The government cannot lower the tax rate, for it needs the added money to raise the salaries of its employees to match the rising price level.

If the income of a taxpayer before he succeeds in shifting the tax is  $a$ , and the tax rate is  $t$ , and if the taxpayer's income is to increase by an absolute amount  $x$  so that

$$(a + x) - (a + x) t = a$$

$$\left. \begin{array}{l} \text{the new} \\ \text{income} \end{array} \right\} \text{minus} \left\{ \begin{array}{l} \text{the tax} \\ \text{on the new} \\ \text{income} \end{array} \right\} \text{equals} \left\{ \begin{array}{l} \text{the old} \\ \text{income} \end{array} \right\}$$

then

$$x = \frac{at}{1 - t}$$

The percentage increase in  $a$  is

$$\frac{\frac{at}{1 - t}}{a} \cdot 100 = \frac{t}{1 - t} \cdot 100.$$

The government's revenue must increase by the same percentage if the government employees are not to be put in a worse relative position. Hence the government needs all the additional tax money, and the tax rate stays at  $t$ .

Backward shifting of the income tax occurs when the prices that the taxpayers pay in their capacity as consumers decline without any decline in the physical volume of goods and services offered for sale. A merely formal backward shifting occurs when, as a consequence of the decline in selling prices, everyone's income falls by the same percentage as his consumption expenditures. This result cannot obtain unless all individuals spend for consumption a uniform proportion of their incomes. A merely formal backward shifting of the income tax is consequently quite remote from reality, but a brief description may be in order.

As explained above, complete (even if only formal) forward shifting of the income tax raises the taxpayer's income enough to match the tax payment as computed on the new higher level of incomes. When the income tax is shifted backward, the criterion of complete formal backward shifting is a decrease in money outlay on consumption, without any change in real outlay, that matches the money tax payment at the new, lower level of incomes.

It is assumed that the taxpayer spends on consumption all his income after tax. If his income before tax is  $a$ , if the decrease in his income compatible with complete formal backward shifting is  $x$ , and if the tax rate is  $t$ , then complete formal backward shifting exists when the tax on the new income  $(a - x)t$ , equals the difference between the former consumption expenditure  $(a - at)$ , and the new consumption expenditure  $[(a - x) - (a - x)t]$ . This reduces to  $x = -at$ . The decline in income ( $x$ ) must equal in absolute amount the tax on the former income ( $at$ ), to achieve complete formal backward shifting.

Strictly defined, formal shifting will not be merely formal unless there are corresponding percentage increases (or decreases) in the values of plant, equipment, inventory, and other non-money assets held at the end of the year, compared with what those values would be in the absence of shifting, and similar increases (or decreases) in money assets held at the end of the year. Similarly, the selling price of any property disinvested during the period must show an increase (or decrease) of the same percentage. Otherwise, the real net worth of some members of the economy will decline relative to that of others, because of the higher or lower level of prices of goods produced during the year.

The requirement that money-holdings change makes absolutely formal shifting almost if not quite unattainable. There seems to be no mechanism by which a tax that is formally shifted can also cause a corresponding change in year-end cash balances.

This definition of formal shifting might be considered over-strict on the ground that, if the owner of the money never uses it anyway, everybody's real

position is kept at the old proportions (defining "real" to include only the uses of money). But this argument ignores the fact that the money is held — rather than scattered in the streets or burned — because the holder values the claim it gives him over the resources and future output of the country. A general rise in prices forced by a forward shifting of the income tax diminishes the real value of that claim. No doubt the diminution is felt less keenly than if it were produced by a direct removal of some of the money. A wealthy holder of \$100,000 cash balance will probably view a gradual rise of prices of, say 25 per cent over five years, with little feeling that he has lost one fifth of his claim on the resources and future output of his country, and at least with less feeling than if prices had remained stable and a 20 per cent capital levy had been enacted. The present analysis, however, deals with objective definitions, not subjective reactions.

In brief, then, a forward shifting of an income tax, compared with no shifting of the same tax, imposes a sort of capital levy on the holders of cash balances. It is a peculiar sort of capital levy: it produces no money revenue for the government. But it nonetheless eases the government's financial task. It lessens the potential claim of these cash-holders on the economy's resources. At some future time, when the holders of the cash balances will want to spend them, they will take a smaller proportion of the economy's manpower and other resources than if the price level had stayed down, under no shifting. Consequently, the government will be able to get the resources it wants at this later date by applying somewhat less severe taxation than if these cash-holders had retained their original proportionate claims on the community's resources — less severe in terms of tax rate. This reasoning becomes less applicable to the extent that the resources the government wants are unemployed anyway, and can be obtained without raising prices.

Correspondingly, backward shifting of an income tax, compared with no shifting of the same tax, gives a subsidy to holders of cash balances.

## Appendix B

### REVISED SERIES ON NATIONAL INCOME ISSUED BY DEPARTMENT OF COMMERCE

In July, 1947, the Department of Commerce published its revised series of national income data for 1929-46. Tables B-4 to B-9 below reproduce the chief summary data.

#### NATIONAL INCOME

The new and old series of national income totals compare as follows, in billions of current dollars (no series of revised data has been published in terms of dollars of constant purchasing power):

TABLE B-1  
Comparison of National Income Totals, 1929-46  
Commerce Old and New Series <sup>a</sup>

| Year | New Series | Old Series<br>(Table 6, Chapter 5) | Increase over, or Decrease (-)<br>from, Old Series |
|------|------------|------------------------------------|--|
| 1929 | 87.4       | 83.3                               | 4.1  |
| 1930 | 75.0       | 68.9                               | 6.1  |
| 1931 | 58.9       | 54.5                               | 4.4  |
| 1932 | 41.7       | 40.0                               | 1.7  |
| 1933 | 39.6       | 42.3                               | -2.7   |
| 1934 | 48.6       | 49.5                               | -.9  |
| 1935 | 56.8       | 55.7                               | 1.1  |
| 1936 | 66.9       | 64.9                               | 2.0  |
| 1937 | 73.6       | 71.5                               | 2.1  |
| 1938 | 67.4       | 64.2                               | 3.2  |

<sup>a</sup> Data on changes from old series to new are from *Survey of Current Business*, July, 1947; Supplement, "National Income," p. 14, Table VII.

TABLE B-1 (continued)

| Year | New Series | Old Series<br>(Table 6, Chapter 5) | Increase over, or Decrease (—)<br>from, Old Series |
|------|------------|------------------------------------|--|
| 1939 | 72.5       | 70.8                               | 1.7  |
| 1940 | 81.3       | 77.6                               | 3.7  |
| 1941 | 103.8      | 96.9                               | 6.9  |
| 1942 | 136.5      | 122.2                              | 14.3   |
| 1943 | 168.3      | 149.4                              | 18.9   |
| 1944 | 182.3      | 160.7                              | 21.6   |
| 1945 | 182.8      | 161.0                              | 21.8   |
| 1946 | 178.2      | 165.0                              | 13.2   |

The difference between the old and the new series is accounted for largely by the four following changes in concept: (1) Corporate profits are now computed before deducting corporate income taxes and corporate excess-profits taxes (Chapter 7, §§ 39-44). (2) Net imputed rent of owner-occupied dwellings is now included (Chapter 5, §§ 15-19). (3) An adjustment is made to put changes in inventory on a current-price basis, thus excluding from national income inventory profits and inventory losses (Chapter 5, §§ 39-44). (4) Government interest payments are now not counted in national income (Chapter 7, §§ 65-68). Table B-9 shows the size of each of these changes, for the years 1929-46.

For the war years, three other changes made an appreciable difference (changing the national income total by \$1.0 or more): (1) Income in kind to the armed forces is now included (Chapter 6, § 28). This adds, for the years 1942-46, respectively, in billions of dollars, 1.4, 2.7, 3.8, 4.1, and 1.4. (2) The government's contribution to military family allowances is now included in national income, adding, for the years 1943-46, respectively, in billions of dollars, 1.0, 2.5, 2.9, and 0.7. (3) The government's contribution to military life insurance funds is also now included, adding, for 1945 and 1946, in billions of dollars, 1.3 and 1.6.

The new series takes into account changes in farm inventories of crops not held for sale. In one year, 1936, this makes a difference of more than one billion dollars: \$1.4 billion is added to national income.

As contrasted with changes due to alteration of the concept of national income, part of the difference between the two totals arises from "statistical revision," that is, improvement in sources of data. This revision is a minor factor, accounting for more than one billion dollars of change only in 1942-43, and 1945-46, respectively, in billions of dollars: 1.1; 1.5; 2.3; 6.9.

All other items account for less than one billion dollars of change in any one year. The changes not mentioned above are: exclusion of depletion

deduction (Chapter 5, § 31); inclusion of employer contributions to private pension and welfare funds; and exclusion of private pension payments and military retirement payments.

## GROSS NATIONAL PRODUCT

Table B-2 shows how the new and old series of gross national product totals compare, in billions of current dollars.

TABLE B-2

### Comparison of Gross National Product Totals, 1929-46 Commerce Old and New Series <sup>a</sup>

| Year | New Series | Old Series<br>(Table 31, Chapter 6) | Increase over Old Series |
|------|------------|-------------------------------------|--------------------------|
| 1929 | 103.8      | 99.4                                | 4.4                      |
| 1930 | 90.9       | 88.2                                | 2.7                      |
| 1931 | 75.9       | 72.1                                | 3.8                      |
| 1932 | 58.3       | 55.4                                | 2.9                      |
| 1933 | 55.8       | 54.8                                | 1.0                      |
| 1934 | 64.9       | 63.8                                | 1.1                      |
| 1935 | 72.2       | 70.8                                | 1.4                      |
| 1936 | 84.7       | 81.7                                | 3.0                      |
| 1937 | 90.2       | 87.7                                | 2.5                      |
| 1938 | 84.7       | 80.6                                | 4.1                      |
| 1939 | 90.4       | 88.6                                | 1.8                      |
| 1940 | 100.5      | 97.1                                | 3.4                      |
| 1941 | 125.3      | 120.2                               | 5.1                      |
| 1942 | 159.6      | 152.3                               | 7.3                      |
| 1943 | 192.6      | 187.4                               | 5.2                      |
| 1944 | 210.6      | 197.6                               | 13.0                     |
| 1945 | 213.1      | 199.2                               | 13.9                     |
| 1946 | 203.7      | 194.0                               | 9.7                      |

<sup>a</sup> Data on changes from old series to new are from *Survey of Current Business*, July, 1947; Supplement, "National Income," p. 14, Table VII.

The differences between the two series are due largely to two items mentioned in the section immediately above on national income — the inclusion of net imputed rent of owner-occupied dwellings, and the exclusion of government interest payments — and to two other changes of concept: depreciation of owner-occupied dwellings is now taken into account, and, as an element of gross imputed rental, appears in the gross national product

(Chapter 5, § 30); and taxes on owner-occupied dwellings, now being counted as taxes on the business of renting one's house to oneself, likewise form a part of gross imputed rental and hence are included in the gross national product (Chapter 7, § 41). The series of these last two items are given in Table B-9.

For the war years, the statements above on income in kind to the armed forces, and the government's contributions to military family allowances and military life insurance funds apply also to the differences in the gross national product series. So does the statement on changes in farm inventories of crops not held for sale.

Four other changes account for the remaining difference due to alteration of concept: institutional depreciation is now included in gross product (Chapter 6, § 34); so are construction expenditures for crude petroleum and natural gas drilling; a new minus entry consists of subsidies minus current surplus of government enterprises (Chapter 7, §§ 38, 59); and military retirement payments are excluded. No one of these items accounts for as much as one billion dollars of change in gross national product in any one year.

The statistical revision, as distinguished from the conceptual revision, accounts for a substantial part of the total change in some years (in billions of dollars): 1930, -1.3; 1938, 1.4; 1941, 1.6; 1942, 2.4; 1944, 4.3; 1945, 3.9; 1946, 4.7. For all the other years the effect is less than one billion dollars.

## PERSONAL INCOME (INCOME PAYMENTS TO INDIVIDUALS)

The new and old series of income payments to individuals compare as follows, in billions of current dollars. The revised series also employs a new term: personal income.

TABLE B-3

Comparison of Totals for Income Payments to Individuals, 1929-46,  
Commerce Old and New Series <sup>a</sup>

| Year | New Series | Old Series<br>(Table 48, Chapter 10) | Increase over Old Series |
|------|------------|--------------------------------------|--------------------------|
| 1929 | 85.1       | 82.6                                 | 2.5                      |
| 1930 | 76.2       | 73.3                                 | 2.9                      |
| 1931 | 64.8       | 62.0                                 | 2.8                      |
| 1932 | 49.3       | 47.4                                 | 1.9                      |
| 1933 | 46.6       | 46.3                                 | .3                       |



TABLE B-3 (continued)

| Year | New Series | Old Series<br>(Table 48, Chapter 10) | Increase over Old Series |
|------|------------|--------------------------------------|--------------------------|
| 1934 | 53.2       | 52.9                                 | .3                       |
| 1935 | 59.9       | 58.6                                 | 1.3                      |
| 1936 | 70.6       | 68.1                                 | 2.5                      |
| 1937 | 74.0       | 72.4                                 | 1.6                      |
| 1938 | 68.3       | 66.2                                 | 2.1                      |
| 1939 | 72.6       | 70.8                                 | 1.8                      |
| 1940 | 78.3       | 76.2                                 | 2.1                      |
| 1941 | 95.3       | 92.7                                 | 2.6                      |
| 1942 | 122.2      | 117.3                                | 4.9                      |
| 1943 | 149.4      | 143.1                                | 6.3                      |
| 1944 | 164.9      | 156.8                                | 8.1                      |
| 1945 | 171.6      | 160.8                                | 10.8                     |
| 1946 | 177.2      | 165.1                                | 12.1                     |

<sup>a</sup> Data on changes from old series to new are from *Survey of Current Business*, July, 1947; Supplement, "National Income," p. 14, Table VII.

The chief difference between the new and the old series, aside from the war years, is the inclusion in the new series of net imputed rent of owner-occupied dwellings (Chapter 5, §§ 15-19). During the war years a substantial difference arises from the inclusion, in the new series, of income in kind to the armed forces (Chapter 6, § 28) and the exclusion of premiums paid to military life insurance funds. In 1946 the inclusion of an inventory valuation adjustment for unincorporated concerns (a part of the total adjustment referred to in the section above on changes in the national income totals; see also Chapter 5, §§ 39-44) pulled the new total down by \$1.3 billion; the data on this adjustment are given in Table B-9. The statistical revision, distinguished from the effects of changes in concept, was less than \$1 billion in absolute amount in each of the years 1929-1942. In 1943-46 it was, respectively, in billions of dollars: 1.9, 1.5, 3.3, and 7.9.

The rest of the difference in the totals of the personal-income series is accounted for by the following conceptual changes, no one of which produced as much as \$1 billion of change in absolute amount in any one year: exclusion of noncorporate depletion deduction (a part of the total depletion deduction referred to in the national income section above; see also Chapter 5, § 31); inclusion of change in farm inventories of crops not held for sale (\$1.4 billion in 1936); inclusion of employer contributions to private pension and welfare funds (Chapter 5, § 5); inclusion of government military life insurance benefits; inclusion of business transfer payments (for example gifts by business concerns); and exclusion of private pension payments (Chapter 5, § 5).

TABLE B-4

# National Income by Factor Payments, United States, 1929-46

(Commerce, new series)<sup>a</sup>

[in billions of current dollars]

|   | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 1940 | 1941  | 1942  | 1943  | 1944  | 1945  | 1946  |
|---|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| National income   | 87.4 | 75.0 | 58.9 | 41.7 | 39.6 | 48.6 | 56.8 | 66.9 | 73.6 | 67.4 | 72.5 | 81.3 | 103.8 | 136.5 | 168.3 | 182.3 | 182.8 | 178.2 |
| Compensation of employees                                   | 50.8 | 46.5 | 39.5 | 30.8 | 29.3 | 34.1 | 37.1 | 42.7 | 47.7 | 44.7 | 47.8 | 51.8 | 64.3  | 84.7  | 109.1 | 121.2 | 122.9 | 116.8 |
| Wages, and salaries:  |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |
| Private   | 45.2 | 40.7 | 33.6 | 25.3 | 23.7 | 27.4 | 30.0 | 33.9 | 38.4 | 34.6 | 37.5 | 41.1 | 51.5  | 65.6  | 78.7  | 83.3  | 82.1  | 90.2  |
| Government  | 5.0  | 5.2  | 5.3  | 5.0  | 5.2  | 6.1  | 6.5  | 7.9  | 7.5  | 8.2  | 6.2  | 8.5  | 10.2  | 16.1  | 26.9  | 33.6  | 35.5  | 20.9  |
| Supplements to wages  |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |
| and salaries  | .6   | .6   | .6   | .5   | .5   | .5   | .6   | .9   | 1.7  | 1.9  | 2.1  | 2.2  | 2.6   | 3.0   | 3.6   | 4.2   | 5.3   | 5.6   |
| Net income of unincorporated enterprises: <sup>b</sup>      |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |
| Other than farms  |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |
| farms   | 8.3  | 7.0  | 5.3  | 3.2  | 2.9  | 4.3  | 5.0  | 6.1  | 6.6  | 6.3  | 6.8  | 7.7  | 9.6   | 12.1  | 14.1  | 15.3  | 16.7  | 19.7  |
| Farms   | 5.7  | 3.9  | 2.9  | 1.7  | 2.3  | 2.3  | 4.9  | 6.1  | 5.6  | 4.4  | 4.5  | 4.9  | 6.9   | 10.6  | 11.8  | 12.4  | 13.5  | 15.2  |
| Rental income of persons                                    | 5.8  | 4.8  | 3.6  | 2.5  | 2.0  | 2.1  | 2.3  | 2.7  | 3.1  | 3.3  | 3.5  | 3.6  | 4.3   | 5.4   | 6.2   | 6.7   | 7.0   | 6.9   |
| Corporate profits, including inventory valuation adjustment |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |
| ment  | 10.3 | 6.6  | 1.6  | -2.0 | -2.0 | 1.1  | 3.0  | 4.9  | 6.2  | 4.3  | 5.8  | 9.2  | 14.6  | 19.8  | 23.7  | 23.5  | 19.7  | 16.5  |

<sup>a</sup> Survey of Current Business, July, 1947; Supplement, "National Income," p. 19, Table 1.<sup>b</sup> Includes inventory valuation adjustment.

TABLE B-4 (continued)

|                                 |     |                   |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |
|---------------------------------|-----|-------------------|------|------|------|------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| Inventory valuation adjustment  | .5  | 3.3               | 2.4  | 1.0  | -2.1 | -.6  | -.2 | -.7 | b   | 1.0 | -.7 | -.1 | -2.6 | -1.3 | -.8  | -.4  | -.5  | -4.7 |
| Corporate profits tax liability | 1.4 | .8                | .5   | .4   | .5   | .7   | 1.0 | 1.4 | 1.5 | 1.0 | 1.5 | 2.9 | 7.8  | 11.7 | 14.2 | 13.9 | 11.3 | 8.6  |
| Dividends                       | 5.8 | 5.5               | 4.1  | 2.6  | 2.1  | 2.6  | 2.9 | 4.6 | 4.7 | 3.2 | 3.8 | 4.0 | 4.5  | 4.3  | 4.5  | 4.7  | 4.8  | 5.6  |
| Undistributed profits           | 2.6 | -3.0 <sup>d</sup> | -5.4 | -6.0 | -2.4 | -1.6 | -.6 | -.3 | b   | -.9 | 1.2 | 2.4 | 4.9  | 5.1  | .5   | 5.2  | 4.2  | 6.9  |
| Net interest                    | 6.5 | 6.2               | 5.9  | 5.4  | 5.0  | 4.3  | 4.5 | 4.5 | 4.4 | 4.3 | 4.2 | 4.1 | 4.1  | 3.9  | 3.4  | 3.2  | 3.1  | 3.2  |

<sup>b</sup> Less than \$50 million in absolute amount.

TABLE B-5

Gross National Product and Its Major Components, United States, 1929-46 (Commerce, new series)<sup>a</sup>

(in billions of current dollars)

|                                   | 1929  | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 1940  | 1941  | 1942  | 1943  | 1944  | 1945  | 1946  |
|-----------------------------------|-------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| Gross national product            | 103.8 | 90.9 | 75.9 | 58.3 | 55.8 | 64.9 | 72.2 | 84.7 | 90.2 | 84.7 | 90.4 | 100.5 | 125.3 | 159.6 | 192.6 | 210.6 | 213.1 | 203.7 |
| Personal consumption expenditures | 78.8  | 70.8 | 61.2 | 49.2 | 46.3 | 51.9 | 56.2 | 62.5 | 67.1 | 64.5 | 67.5 | 72.1  | 82.3  | 90.8  | 101.6 | 110.4 | 121.7 | 143.7 |
| Durable goods                     | 9.4   | 7.3  | 5.6  | 3.7  | 3.5  | 4.3  | 5.2  | 6.4  | 7.0  | 5.8  | 6.7  | 7.9   | 9.8   | 6.8   | 6.5   | 6.8   | 8.0   | 14.9  |
| Non-durable goods                 | 37.7  | 34.1 | 29.0 | 22.7 | 22.3 | 26.7 | 29.4 | 32.9 | 35.2 | 34.0 | 35.3 | 37.6  | 44.0  | 53.0  | 61.2  | 67.2  | 75.3  | 87.1  |
| Services                          | 31.7  | 29.5 | 26.6 | 22.8 | 20.6 | 20.9 | 21.7 | 23.3 | 24.9 | 24.7 | 25.5 | 26.6  | 28.5  | 31.0  | 33.9  | 36.5  | 38.4  | 41.7  |
| Gross private domestic investment | 15.8  | 10.2 | 5.4  | .9   | 1.3  | 2.8  | 6.1  | 10.5 | 11.4 | 6.3  | 9.0  | 13.0  | 17.2  | 9.3   | 4.6   | 5.7   | 9.1   | 24.6  |
| New construction                  | 7.8   | 5.6  | 3.6  | 1.7  | 1.1  | 1.4  | 1.9  | 2.8  | 3.7  | 3.3  | 4.0  | 4.6   | 5.7   | 3.2   | 2.0   | 2.3   | 3.1   | 8.5   |
| Producers' durable equipment      | 6.4   | 4.9  | 3.2  | 1.8  | 1.8  | 2.5  | 3.4  | 4.5  | 5.4  | 4.0  | 4.6  | 6.1   | 7.7   | 4.7   | 3.8   | 5.3   | 7.1   | 12.4  |

<sup>a</sup> Survey of Current Business, July, 1947; Supplement, "National Income," p. 19, Table 2.

TABLE B-5 (continued)

|  |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Change in business inventories             | 1.6 | - .3 | -1.4 | -2.6 | -1.6 | -1.1 | .9   | 3.2  | 2.3  | -1.0 | .4   | 2.3  | 3.9  | 1.4  | -1.2 | -2.0 | -1.2 | 3.7  |
| Net foreign investment                     | .8  | .7   | .2   | .2   | .2   | .4   | - .1 | - .1 | .1   | 1.1  | .9   | 1.5  | 1.1  | - .2 | -2.2 | -2.1 | - .8 | 4.8  |
| Government purchases of goods and services | 8.5 | 9.2  | 9.2  | 8.1  | 8.0  | 9.8  | 9.9  | 11.7 | 11.6 | 12.8 | 13.1 | 13.9 | 24.7 | 59.7 | 88.6 | 96.6 | 83.1 | 30.7 |
| Federal, war <sup>b</sup>                  | 1.3 | 1.4  | 1.5  | 1.5  | 2.0  | 3.0  | 2.9  | 4.8  | 4.6  | 5.3  | 1.3  | 2.2  | 13.8 | 49.6 | 80.4 | 88.6 | 76.2 | 21.3 |
| Federal, non-war <sup>b</sup>              |     |      |      |      |      |      |      |      |      |      | 3.9  | 4.0  | 3.2  | 2.7  | 1.5  | 1.6  | 1.0  | 2.4  |
| Less: Federal sales <sup>c</sup>           | d   | d    | d    | d    | d    | d    | d    | d    | d    | d    | d    | d    | d    | .2   | .6   | 1.2  | 2.2  | 3.0  |
| State and local                            | 7.2 | 7.8  | 7.7  | 6.6  | 5.9  | 6.8  | 7.0  | 6.9  | 7.0  | 7.5  | 7.9  | 7.8  | 7.8  | 7.6  | 7.4  | 7.5  | 8.2  | 10.0 |

<sup>b</sup> "The classification of purchases of goods and services into war and nonwar conforms, in general, to the Daily Treasury Statement classification of general and special account expenditures. War purchases include also that part of the capital formation of government enterprises which is attributable to their war activities. Government contributions to the National Service Life Insurance Fund are classified as war; all other government contributions for social insurance, as nonwar." *Idem*.

<sup>c</sup> "Consists of sales to abroad and domestic sales of surplus consumption goods and materials." *Idem*.

<sup>d</sup> Less than \$50 million.

TABLE B-6

## Relation of Gross National Product to National Income, United States, 1929-46 (Commerce, new series)

(in billions of current dollars)

|   | 1929  | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 1940  | 1941  | 1942  | 1943  | 1944  | 1945  | 1946  |
|---|-------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| Gross national product  | 103.8 | 90.9 | 75.9 | 58.3 | 55.8 | 64.9 | 72.2 | 84.7 | 90.2 | 84.7 | 90.4 | 100.5 | 125.3 | 159.6 | 192.6 | 210.6 | 213.1 | 203.7 |
| Less:   |       |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |       |
| Depreciation  | 7.6   | 7.7  | 7.5  | 7.0  | 6.6  | 6.5  | 6.6  | 6.6  | 6.8  | 6.9  | 7.1  | 7.2   | 7.9   | 8.7   | 9.4   | 10.5  | 10.6  | 8.9   |
| Accidental damage to fixed capital                              | .4    | .4   | .4   | .3   | .3   | .2   | .2   | .4   | .3   | .4   | .2   | .2    | .3    | .5    | .4    | .4    | .4    | .4    |
| Capital outlays charged to current expense                      | .8    | .7   | 5    | .4   | .4   | .5   | .6   | .7   | .8   | .7   | .8   | 1.0   | 1.1   | .8    | .8    | .9    | 1.1   | 1.8   |
| Equals: Net national product                                    | 95.0  | 82.1 | 67.6 | 50.7 | 48.5 | 57.6 | 64.8 | 77.0 | 82.2 | 76.7 | 82.3 | 92.0  | 116.0 | 149.7 | 182.0 | 198.8 | 201.0 | 192.6 |
| Plus: Subsidies minus current surplus of government enterprises | -.1   | -.1  | b    | b    | b    | .3   | .4   | b    | .1   | .2   | .5   | .4    | .1    | .2    | .2    | .7    | .8    | .8    |

<sup>a</sup> Survey of Current Business, July, 1947; Supplement, "National Income," p. 20, Table 4.<sup>b</sup> Less than \$50 million in absolute amount.

TABLE B-6 (continued)

TABLE B-7  
Disposable Personal Income: Its Components and Uses Made of It, United States, 1929-46  
(Commerce, new series)<sup>a</sup>

|   | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 1940 | 1941 | 1942 | 1943  | 1944  | 1945  | 1946  |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|
|   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |
| Wages, salaries and other labor income <sup>b</sup>                   | 50.5 | 46.3 | 39.2 | 30.5 | 29.0 | 33.8 | 36.8 | 42.1 | 45.9 | 42.8 | 45.7 | 49.5 | 61.5 | 81.2 | 104.4 | 116.2 | 116.7 | 110.8 |
| Net income of unincorporated enterprises and rental income of persons | 19.7 | 15.7 | 11.8 | 7.4  | 7.2  | 8.7  | 12.1 | 14.8 | 15.4 | 14.0 | 14.7 | 16.3 | 20.8 | 28.1 | 32.1  | 34.4  | 37.1  | 41.8  |
| Dividends   | 5.8  | 5.5  | 4.1  | 2.6  | 2.1  | 2.6  | 2.9  | 4.6  | 4.7  | 3.2  | 3.8  | 4.0  | 4.5  | 4.3  | 4.5   | 4.7   | 4.8   | 5.6   |
| Personal interest income  | 7.5  | 7.1  | 7.0  | 6.6  | 6.2  | 6.0  | 5.7  | 5.6  | 5.6  | 5.5  | 5.4  | 5.4  | 5.4  | 5.4  | 5.5   | 6.0   | 6.8   | 7.7   |
| Transfer payments   | 1.5  | 1.5  | 2.7  | 2.2  | 2.1  | 2.2  | 2.4  | 3.5  | 2.4  | 2.8  | 3.0  | 3.1  | 3.1  | 3.2  | 3.0   | 3.6   | 6.2   | 11.3  |
| Less: Personal tax and non-tax payments to:                           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |
| Federal government  | 1.3  | 1.1  | .6   | .3   | .5   | .6   | .8   | 1.1  | 1.7  | 1.6  | 1.2  | 1.4  | 2.0  | 4.7  | 16.5  | 17.5  | 19.4  | 17.2  |
| State and local governments   | 1.4  | 1.4  | 1.3  | 1.1  | 1.0  | 1.0  | 1.1  | 1.1  | 1.2  | 1.2  | 1.2  | 1.2  | 1.3  | 1.3  | 1.3   | 1.4   | 1.5   | 1.6   |

<sup>a</sup> Survey of Current Business, July, 1947; Supplement, "National Income," p. 19, Table 3.

<sup>b</sup> Wages and salaries, minus employee contributions for social insurance, plus the "other labor income" component of "Supplements to wages and salaries."



TABLE B-7 (continued)

|  |      |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| Equals: Disposable personal income     | 82.5 | 73.7 | 63.0 | 47.8 | 45.2 | 51.6 | 58.0 | 68.3 | 71.1 | 65.5 | 70.2 | 75.7 | 92.0 | 116.2 | 131.6 | 146.0 | 150.7 | 158.4 |
| Less: Personal consumption expenditure | 78.8 | 70.8 | 61.2 | 49.2 | 46.3 | 51.9 | 56.2 | 62.5 | 67.1 | 64.5 | 67.5 | 72.1 | 82.3 | 90.8  | 101.6 | 110.4 | 121.7 | 143.7 |
| Equals: Personal saving                | 3.7  | 2.9  | 1.8  | -1.4 | -1.2 | -2   | 1.8  | 5.8  | 3.9  | 1.0  | 2.7  | 3.7  | 9.8  | 25.4  | 30.0  | 35.6  | 29.0  | -14.8 |

TABLE B-8  
Saving and Investment, United States, 1929-46 (Commerce, new series)<sup>a</sup>

(in billions of current dollars)

|   | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Gross private saving <sup>b</sup>   | 15.5 | 11.2 | 8.4  | 2.8  | 2.7  | 5.6  | 7.9  | 13.3 | 10.8 | 8.9  | 11.8 | 15.0 | 21.8 | 40.2 | 46.6 | 54.7 | 47.9 | 25.9 |
| Gross investment <sup>c</sup>   | 16.6 | 10.9 | 5.6  | 1.1  | 1.5  | 3.2  | 6.1  | 10.4 | 11.5 | 7.4  | 9.9  | 14.5 | 18.3 | 9.1  | 2.3  | 3.6  | 8.3  | 29.4 |
| Government deficit (+) or surplus (-) on income and product transactions <sup>d</sup> |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Federal   | -1.1 | .3   | 2.8  | 1.7  | 1.3  | 2.4  | 1.8  | 2.9  | -.7  | 1.5  | 1.9  | .5   | 3.5  | 31.1 | 44.2 | 51.1 | 39.5 | -3.5 |
| State and local   | -1.2 | -.3  | 2.1  | 1.5  | 1.3  | 2.8  | 2.5  | 3.5  | .2   | 2.0  | 2.2  | 1.4  | 4.9  | 33.0 | 46.6 | 53.6 | 41.8 | -2.3 |
|   | .1   | .5   | .7   | .2   | e    | -.5  | -.7  | -.6  | -.9  | -.5  | -.3  | -.9  | -1.4 | -1.9 | -2.4 | -2.5 | -2.3 | -1.2 |

<sup>a</sup> *Survey of Current Business*, July, 1947; Supplement, "National Income," p. 20, Table 5.

<sup>b</sup> Made up of the following items from the preceding tables: Personal saving, Undistributed corporate profits, Corporate inventory valuation adjustment, Business depreciation charges, Institutional depreciation, Accidental damage to fixed business capital, Capital outlay charged to current expense, Statistical discrepancy in Table B-6, and an item, "Excess of wage accruals over disbursements," which is zero in all years except, in billions of dollars: 1943, .2; 1944, -.2; 1945, .01; 1946, -.03.

<sup>c</sup> Made up of the following two items from Table B-5: Gross private domestic investment, and Net foreign investment.

<sup>d</sup> The deficit is given a positive sign and the surplus a negative sign to indicate that the sum of investment and government deficit, considered in their absolute amounts without regard to sign, equals private saving (Chapter 8, § 10). <sup>e</sup> Less than \$50 million in absolute amount.

TABLE B-9

Major Quantitative Items in Commerce Series Involving Conceptual Changes, 1929-46<sup>a</sup>

(in billions of current dollars)

|  | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Corporate profits taxes                      | 1.4  | .8   | .5   | .4   | .5   | .7   | 1.0  | 1.4  | 1.5  | 1.0  | 1.5  | 2.9  | 7.8  | 11.7 | 14.2 | 13.9 | 11.3 | 8.6  |
| Net imputed rent of owner-occupied dwellings | 2.8  | 2.5  | 2.1  | 1.6  | 1.2  | .9   | .9   | 1.0  | 1.2  | 1.4  | 1.5  | 1.5  | 1.7  | 2.0  | 2.4  | 2.7  | 3.0  | 2.9  |
| Inventory valuation adjustment <sup>b</sup>  | .6   | 4.0  | 3.0  | 1.3  | -2.7 | -7   | -3   | -9   | -1   | 1.2  | -9   | -2   | -3.3 | -1.6 | -1.0 | -4   | -6   | -6.0 |
| Non-corporate only                           | .1   | .8   | .6   | .3   | -5   | -1   | -1   | -1   | c    | .2   | -2   | -1   | -6   | -4   | -1   | -1   | -4   | -1.3 |
| Government interest payments                 | 1.0  | 1.0  | 1.1  | 1.1  | 1.2  | 1.2  | 1.1  | 1.1  | 1.2  | 1.2  | 1.2  | 1.3  | 1.3  | 1.5  | 2.1  | 2.8  | 3.7  | 4.5  |
| Depreciation of owner-occupied dwellings     | 1.0  | 1.0  | 1.0  | .9   | .9   | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.1  | 1.1  | 1.2  | 1.3  | 1.3  | 1.4  | 1.5  |
| Taxes on owner-occupied dwellings            | 1.0  | 1.1  | 1.0  | 1.0  | .9   | .9   | .9   | .9   | .9   | .9   | .9   | .9   | .9   | .9   | 1.0  | 1.0  | 1.1  | 1.2  |

<sup>a</sup> *Survey of Current Business*, July, 1947; Supplement, "National Income," p. 14, Table VII.<sup>b</sup> A plus figure indicates that the new series total is larger by this amount than that of the old series; a minus figure, that the new series total is smaller.<sup>c</sup> Less than \$50 million in absolute amount.

# Appendix C

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